C55.217:4.11

Key to Meteorological Records Documentation No. 4.11

PENNSYLVANIA STATE UNIVERSITY
APR 10 1980
DOCUMENTS COLLECTION

Selective Guide to Climatic Data Sources

WASHINGTON, D.C.
DECEMBER 1979

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Environmental Data And Information Service

Key to Meteorological Records Documentation No. 4.11

Selective Guide to Climatic Data Sources

Keith D. Butson and Warren L. Hatch

National Climatic Center
Asheville, N.C.

U.S. DEPARTMENT OF COMMERCE
Philip M. Klutznick, Secretary

National Oceanic and Atmospheric Administration
Richard A. Frank, Administrator

Environmental Data And Information Service
Thomas D. Potter, Acting Director

INTRODUCTION

This GUIDE is designed to assist potential users of climatological data by informing them of the availability of such data in published and unpublished form. It is arranged to indicate the publication(s) in which these data in their various climatological categories (temperature, precipitation, wind, atmospheric pressure, humidity, etc.), both surface and upper air, may be found. A brief review of the pertinent historical facts associated with each publication is given where appropriate. The various climatological tables, charts, and graphs included in each publication are listed, and in many cases abbreviated examples are shown.

Most of the publications described in PART I are available on subscription from the National Climatic Center (NCC). Subscription rates for these publications will be quoted upon request by the Director, National Climatic Center, Federal Building, Asheville, NC 28801. Subscriptions may be entered for a maximum of 3 years at the quoted rate. Copies of back issue publications are also available, but there is a minimum charge of $3.00 per order for shelf-stocked publications, if in print; copies of out-of-print issues can be made for a minimum charge of $5.00 per order (1979 prices). The name and address of the office from which subscriptions or copies of publications that are not distributed by NCC may be obtained are shown where appropriate.

Several climatological atlases have been prepared by the National Oceanic and Atmospheric Administration and by agencies in the Department of Defense. The descriptions provide ordering information for these publications.

All back issues of serial climatological publications and many one-time issues containing specialized climatic data have been placed on 4- by 6-in. microfiche. Future issues will also be filmed in order to maintain continuity and integrity in the microfiche file. In addition, some of the unpublished data compilations have been placed on 100-foot reels of 16mm film. Film copies of existing microforms, or paper copies of the publications or data compilations, can be provided as required. Generally, microfilm and microfiche copy costs much less than paper copy. If microforms are desired, contact NCC to determine the availability and cost of the desired materials.

Although this GUIDE refers primarily to published climatological data, it should be noted that a wealth of unpublished climatological data and/or summaries is also available in the NCC files. PART V describes indexes to many of these materials.

Most of the currently published and unpublished materials described in the GUIDE were prepared at NCC from digitized representations (magnetic tape) of the original records. Information about the content and format of these digital data files and how copies of them may be obtained is available from NCC upon request.

TABLE OF CONTENTS

	Page
Introduction	iii
Index	vi
PART I - CURRENT SERIAL PUBLICATIONS (issue frequency)	
Climatological Data (monthly with annual summary)	1
Climatological Data for Amundsen-Scott, Antarctica (periodically)	8
Climatological Data for Arctic Stations (periodically)	10
Climatological Data, National Summary (monthly with annual summary)	11
Comparative Climatic Data (annually)	18
Daily Weather Maps, Weekly Series (weekly)	19
Environmental/Resource Assessment and Information (weekly)	21
Global Monitoring of the Environment for Selected Atmospheric Constituents (annually)	22
High Altitude Meteorological Data (quarterly)	24
Hourly Precipitation Data (monthly with annual summary)	28
Local Climatological Data (monthly with annual summary)	30
Mariners Weather Log (bimonthly)	36
Monthly Climatic Data for the World (monthly)	38
Monthly Summary, Solar Radiation Data (monthly)	39
River Forecasts Provided by the National Weather Service (annually)	42
Snow Cover Surveys (annually)	44
Storage-Gage Precipitation Data for Western United States (annually)	45
Storm Data (monthly)	46
Synoptic Weather Maps, Daily Series, Northern Hemisphere Sea-Level and 500-Millibar Charts and Data Tabulations (monthly)	47
Weekly Weather and Crop Bulletin (weekly)	49
PART II - MARINE PUBLICATIONS (including atlases)	
Marine Climatological Summaries	55
Mariners Worldwide Climatic Guide to Tropical Storms at Sea	58
Summary of Synoptic Meteorological Observations, (Area of the World) Coastal Marine Areas	59
Summary of Synoptic Meteorological Observations for Great Lakes Areas	64
Tropical Cyclones of the North Atlantic Ocean, 1871-1977	65
U. S. Navy Marine Climatic Atlas of the World	69
PART III - DECENNIAL AND INTERMITTENT PUBLICATIONS	
Climatic Summary of the United States (1930 edition)	73
Climatic Summary of the United States - Supplement for 1931 through 1952	75
Climatic Summary of the United States - Supplement for 1951 through 1960 and Unpublished Data Tabulations	75
Climatography of the United States:	—
No. 20 - Climate of (City)	80
No. 21 - Climatic Summaries of Resort Areas	84
No. 40 - Climatic Guide for (Area)	85
No. 60 - Climate of (Name of State)	87
No. 81 - Monthly Normals of Temperature, Precipitation and Heating and Cooling Degree Days, 1941-70	89
No. 82 - Summary of Hourly Observations	92
No. 84 - Daily Normals of Temperature and Heating and Cooling Degree Days, 1941-1970 (City)	97
No. 85 - Monthly Averages of Temperature and Precipitation for State Climatic Divisions, 1941-1970 (State)	98
No. 90 - Airport Climatological Summary	100
World Weather Records	105
PART IV - SPECIAL PUBLICATIONS (including atlases)	
Average Circulation in the Troposphere over the Tropics	109
Ceiling - Visibility Climatological Study and Systems Enhancement Factors	110
Climates of the World	111
Climatic Atlas of the United States	112
Engineering Weather Data Manual	114
Historical Climatology Series	116
Input Data for Solar Systems	117
NOAA Atlas 2: Precipitation Frequency Atlas of the Western United States	118
NOAA Technical Memorandum NWS HYDRO-35: 5-to 60-Minute Precipitation Frequency for Eastern and Central United States	119

Page

PART IV - SPECIAL PUBLICATIONS (including atlases)(Cont'd)

Selected Climatic Maps of the United States. 120
State, Regional, and National Monthly and Annual Temperatures Weighted by Area (January 1931-December 1977) 121
State, Regional, and National Monthly and Annual Total Precipitation Weighted by Area (January 1931-1977). 121
State, Regional, and National Monthly and Seasonal Cooling Degree Days Weighted by Population (January 1931-December 1977) 121
State, Regional, and National Monthly and Seasonal Heating Degree Days Weighted by Population (July 1931-June 1978). 121
U. S. Air Force Climatic Brief 122
U. S. Navy Station Climatic Summary. 123
U. S. Weather Bureau Technical Paper No. 40, Rainfall Frequency Atlas of the United States. 126
U. S. Weather Bureau Technical Papers. 127
Worldwide Airfield Summaries 131

PART V - DATA CATALOGS AND INDEXES

FGGE Data Catalogue. 137
GATE Data Catalogue. 137
Guide to Standard Weather Summaries and Climatic Services. 137
Index of Historical Surface Weather Records for (State). 138
Index of Original Surface Weather Records (Hourly, Synoptic, and Autographic). 138
Index of Surface Marine Climatic Data Products 140
Index - Summarized Wind Data 140
International Field Year of the Great Lakes (IFYGL) Data Catalog: United States Archive 140
SOLMET, Volume 1 - Users Manual, Hourly Solar Radiation - Surface Meteorological Observations 142
SOLMET, Volume 2 - Final Report, Hourly Solar Radiation - Surface Meteorological Observations 142
STAR Tabulations Master List 142

INDEX OF PUBLISHED CLIMATOLOGICAL DATA BY ELEMENT

BAROMETRIC PRESSURE

		Page
Hourly or 3-hourly :	Station pressure for each hour	30
	Normal station pressure	127
	Average station pressure by hour of day	30,31
Daily :	24-hour average station pressure	31
	Coded sea-level pressure at 1200 GMT for Northern Hemisphere	48
	Coded 3-hourly pressure change and tendency at 1200 GMT for Northern Hemisphere	48
	Irregular observations from ships in North Atlantic and North Pacific Oceans and the Great Lakes during gale conditions	37
	Irregular observations of pressure, temperature, density, and speed of sound at standard heights	25
Monthly :	Average station pressure	13,31,33, 38,106
	Average sea-level pressure	8,13,37, 38,106
	Average pressure, temperature, density, and speed of sound at standard heights	26
	Highest sea-level pressure, and date	37
	Lowest sea-level pressure, and date	37
	Frequency of sea-level pressure at 2-mb intervals for 0000, 0600, 1200, and 1800 GMT for selected oceanic areas	55
	Tracks of high pressure and low pressure centers over the North Pacific and North Atlantic Oceans and the United States from 25° West to 175° West longitude	11
Annual :	Frequency of sea-level pressure at 2-mb intervals for 0000, 0600, 1200, and 1800 GMT for selected oceanic areas	55
Long Period :	Normal 3-hourly pressure tendency	127
	Normal monthly station pressure and pressure tendency	127
	Mean monthly and annual station pressure	33,87, 106,112
	Mean monthly and annual sea-level pressure	60,64, 85,106
	Mean monthly and annual pressure altitude	101,115,118
	Monthly mean sea-level pressure for North Atlantic, South Atlantic, North Pacific, South Pacific and Indian Oceans	69
	Highest and lowest sea-level pressure	8,85
	Monthly and annual frequencies of pressures by 10-mb intervals at Antarctic and Arctic stations	8
	Monthly average pressure, temperature, density, and speed of sound at standard heights	27
	Monthly average height and density at constant pressure surfaces	127
	Seasonal charts of low pressure centers for North Atlantic, South Atlantic, North Pacific, South Pacific, and Indian Oceans	70
	Seasonal patterns of pressure distribution for selected upper air levels	127
	Extreme heights and standard deviations at selected pressure levels	129

CARBON DIOXIDE

Daily :	Irregular flask samples	23

CEILING, SKY CONDITION, OR SKY COVER

Hourly or 3-Hourly :	Values for each hour	30,32
	Average of sky cover by hour of day	30,31
	Occurrences of ceiling and visibility by hour of day	32
Daily :	Sky cover, sunrise to sunset	31
	Sky cover, midnight to midnight	30,31

CEILING, SKY CONDITION, OR SKY COVER (CONT'D)

		Page
Daily	24-hour averages of sky cover	31
	Coded sky cover at 1200 GMT for Northern Hemisphere	48
Monthly	Average sky cover, sunrise to sunset	2,13,31,33
	Average sky cover, midnight to midnight	31,101
	Frequency of total cloud amount (8ths) for selected oceanic areas	55
	Number of days clear, partly cloudy, and cloudy	13,31,33
Annual	Average sky cover, sunrise to sunset	16,33
	Frequency of total cloud amounts (8ths) for selected oceanic areas	55
	Number of days clear, partly cloudy, and cloudy	16,33
	Mean monthly and annual number of days clear, partly cloudy and cloudy	17,18,33,87
Long Period	Mean monthly and annual sky cover, sunrise to sunset	33,87,112
	Mean monthly total cloud amounts, North Atlantic, South Atlantic, North Pacific, South Pacific, and Indian Oceans	69
	Monthly and annual average cloudiness	17,33,87,124
	Monthly occurrences of ceiling-visibility combinations	8,103,110, 124,133
	Percentage frequencies of ceiling-visibility combinations	8,59,64, 86,95,103, 124,132
	Percentage frequencies of sky cover by hour of day	8,95,133
	Percentage frequencies of selected ceiling heights	86
	Percentage frequencies of total cloud amount by wind direction, monthly and annual, for coastal marine areas	59,64
	Percent frequency of ceiling heights, monthly and annual, for coastal marine areas	60
	Percent frequency of ceiling-visibility combinations for North Atlantic, South Atlantic, North Pacific, South Pacific and Indian Oceans	69
	Percentage frequencies of ceiling, visibility, and weather by wind direction	104
	Percentage frequency of total cloud amounts, by months, for North Atlantic, South Atlantic, North Pacific, South Pacific and Indian Oceans	69

DEW POINT

Hourly or 3-hourly	Values for each hour	30,32
	Averages by hour of day	30,31
Daily	24-Hour averages	30,31
	Coded values at 1200 GMT for Northern Hemisphere	48
	Values at standard pressure surfaces for 0000 and 1200 GMT, Northern Hemisphere	48
Monthly	Average	13,31,101
	Frequency of occurrence by 1°C intervals for oceanic areas	55
	Mean values at selected pressure surfaces	14,38
Annual	Frequency of occurrence by 1°C intervals for oceanic areas	55
Long Period	Monthly and annual means	112,122, 124,132
	Monthly means and distribution of, at synoptic hours	86
	Monthly maximum and minimum for North Atlantic, South Atlantic North Pacific, South Pacific, and Indian Oceans	69
	Maximum persisting 12-hour 1000-mb values, monthly and of record	112
	Means for standard pressure surfaces and selected heights	109

EVAPORATION

Daily	Totals with 24-hour wind movement near the ground	3
	Maximum and minimum pan water temperature	3

EVAPORATION (CONT'D)

		Page
Monthly	Totals, with wind movement near the ground	3,5
	Departure from mean	5
	Mean maximum and minimum pan water temperature	3,5
Annual	Total, with wind movement near the ground	5
	Departure from mean	5
	Mean maximum and minimum pan water temperature	5
Long Period	Mean monthly and annual	78,127
	Pan and Lake evaporation, coefficients, and standard deviation	112

FLOODS

Monthly	Summary of river and flood conditions and events	11
	Flood stage data	11
Annual	Summary of river and flood conditions and events	11
	Daily river stages, monthly and annual	43
Long Period	Highest river stages at National Weather Service gages	43

FREEZE (FROST) DATA

Annual	Dates of last freeze in spring and first in fall for threshold temperatures of 32°F, 28°F, 24°F, 20°F, and 16°F	5
Long Period	Dates of last killing freeze in spring, and first in fall for each year	73,116
	Length of growing season for each year	73,116
	Mean date of last 32°F temperature in spring, first 32°F temperature in fall, and length of freeze-free period (days)	112
	Probabilities of later date in spring and earlier date in fall for threshold temperatures of 32°F, 28°F, 24°F, 20°F, and 16°F	81
	Probability of longer than indicated freeze-free period (days)	81

HEATING-DEGREE AND COOLING-DEGREE DAYS

Daily	Totals	31
	Normals (1941-1970)	97
Weekly	Totals	52
	Departure from normal	52
Monthly or Seasonal	Totals	2,4,14,15, 31,33,34, 52,102,125
	Normals (1941-1970)	4,15,17,18, 33,87,90, 97,117
	Totals weighted by population	121
Annual	Totals	16,33,85, 102,125
	Normals (1941-1970)	17,18,33,83, 87,117
	Totals weighted by population	121

HURRICANES AND TROPICAL CYCLONES

		Page
Monthly	Narrative summary on tropical cyclones of the North Atlantic, Eastern North Pacific, and Central North Pacific with tracking charts	11
	Narrative summary on tropical cyclones of the world with tracking charts	36
Annual	Narrative Summary on tropical cyclones of the North Atlantic, Eastern North Pacific, and Central North Pacific with tracking charts	11
Long Period	10-Day period tracking charts, June through November, North Atlantic tropical cyclones 1871-1977	68
	Monthly frequencies of North Atlantic tropical cyclones 1871-1977	67
	Monthly probability charts including statistics on direction, frequency, and average speed of 12-hourly movements for the world	58
	Frequency charts by season and/or 10- to 30-day intervals for the world	58
	Seasonal probability charts with statistics on direction, frequency, and average 12-hour movement for North Atlantic, South Atlantic, North Pacific, South Pacific and Indian Oceans	69
	Annual tracking charts, North Atlantic tropical cyclones 1871-1977	66

OCEAN WAVES

Daily	Selected wave observations (period, height, and direction) for the North Atlantic and North Pacific Oceans	37
Monthly Seasonal	Percent frequency of wave heights, mean height, and extreme height with date of occurrence for United States Ocean Buoy observations	37
	Frequency of occurrence of wave heights and periods for selected oceanic areas	55
Long Period	Percent frequency of wind speed and direction versus sea height, monthly and annual, for coastal marine areas	60,64
	Percent of frequency of wave heights versus wave period, monthly and annual, for coastal marine areas	60,64
	Percent frequency of wave direction, period, and height, monthly, for North Atlantic, South Atlantic, North Pacific, South Pacific, and Indian Oceans	70

OZONE

Daily	Totals	11
Monthly	Totals	11

PRECIPITATION

Hourly	Totals for each hour	29,31
Daily	Totals	3,28,31
	Total snow and sleet (ice pellets)	3,31
	Snow, sleet (ice pellets), and ice on ground	3,31
	Snowfall, snow on ground, and water equivalent	3,44
Weekly	Totals	51
	Departures from normal	51
	Snow, sleet (ice pellets), and ice on ground	49

PRECIPITATION (CONT'D)

		Page
Monthly or Seasonal :	Total amounts	2,4,13,28,29, 31,33,34,38, 52,73,75,76, 79,83,85,102, 106,116,125
	Normals (1941-1970)	18,33,83, 87,89
	Departures from normal	2,12,13, 31,38,52
	Average amounts for State, Region, and Nation weighted by area	121
	Chemistry	23
	Greatest in 24 hours and date	2,29,31,33
	Greatest and least monthly totals within a state, and stations at which they occurred	12,32
	Maximum for specified durations of 15 minutes to 24 hours and date	29
	Number of days with .01 inch or more	13,18,31
	Number of days with 1 mm or more	38
	Number of days with 0.10, 0.50, and 1.00 inch or more	2
	Number of days with trace, 0.01-0.09, 0.10-0.49, 0.50-0.99, 1.00-1.99, and 2.00 inches and over	2
	Totals from storage gage stations	5,45
	Total snow/sleet (ice pellets)	2,13,31,33, 34,45,76, 85,102,116
	Greatest 24-hour fall of snow/sleet (ice pellets) and date	31,33
	Total snow on ground and water equivalent	44
	Greatest depth of snow, sleet, and ice on ground, and date	2,13,31
	Number of days with snow/sleet (ice pellets) 1.0 inch or more	2,31,33
	Dates with hail, sleet, glaze, or rime	31,46
	Irregular measurements of water equivalent of accumulated snowfall, and depth on ground, from storage-gage stations	5,45
Annual :	Total amounts	4,16,29,33,34, 73,76,79,83, 85,102,106, 116,125
	Average amounts for State, Region, and Nation weighted by area	121
	Chemistry means	23
	Greatest in 24 hours, and date	16,29,33
	Maximum for specified durations of 15 minutes to 24 hours, and date	29
	Excessive short-duration falls	12,16,73
	Total snow/sleet (ice pellets)	16,31,34,76, 83,85,102,116
	Greatest fall of snow/sleet (ice pellets) in 24 hours, and date	16,31
	Number of days with snow/sleet (ice pellets) 1.0 inch or more	16,31
Long Period :	Monthly and annual totals	34,76,79,83, 106,116,125
	Monthly and annual means	17,18,33,34,75, 76,79,81,87, 101,102,106, 111,112,116, 120,124,132
	Monthly and annual means for State, Region, and Nation weighted by area	121
	Mean monthly and annual, for state climatic divisions	99
	Mean monthly and annual for selected stations	75,76,87
	Mean total monthly by state climatic divisions	112
	Maximum in 24 hours	17,33,101
	Maximum falls, 5 minutes to 24 hours, and dates	85,87
	Monthly and annual maximums in 24 hours	33,81,87,124

PRECIPITATION (CONT'D)

		Page
Long Period :	Maximum falls for 1,2,3,6,12, and 24 hours, and dates	127
	Excessive falls 5 to 120 minutes	73
	Mean number of days with 0.01 inch or more	17,33,73,87,101, 112,120,124
	Mean number of days with 0.10 inch or more	76,81,87,101,132
	Mean number of days with 0.50 inch or more	76,81,87,101,124
	Frequency occurrence of specified amounts	95
	Percentage frequency of precipitation and snow for North Atlantic, South Atlantic, North Pacific, South Pacific, and Indian Oceans	69
	Percentage occurrence of wind direction versus occurrence of precipitation, monthly and annual, for coastal marine areas	59,64
	Probabilities	82
	Rainfall intensity-duration-frequency	85,118,119,126
	Monthly and seasonal totals, snowfall	17,34,73,76, 83,85,112,116
	Mean monthly and annual snow/sleet (ice pellets)	17,18,34,73,76, 81,87,101,112, 116,124,132
	Maximum snow/sleet (ice pellets) in 24 hours	17,33,85,87, 101,124
	Mean number of days snow/sleet (ice pellets) 1.0 inch or more	17,33,85,87,101
	Mean number of days snow/sleet (ice pellets) 1.5 inches or more	132
	Percentage chance of first and last snowfall	85
	Percentage distribution of snowfall totals	85

RELATIVE HUMIDITY

Hourly or 3-hourly :	Values for each hour	30,32
	Average hourly values	30,31
	Occurrences of relative humidity-temperature-wind speed combinations	30
Daily :	24-hour averages	30
	Values at standard pressure surfaces at 0000 and 1200 GMT for Northern Hemisphere	48
Monthly :	Average and departure from normal	13,73
	Mean values of 4 synoptic observations daily	2,33
	Average values at standard pressure surfaces	8
Annual :	Mean values for each of 4 observations daily	16,33
Long Period :	Mean monthly and annual values for each of 4 synoptic observations daily	33,87,101
	Mean January and July values (3 observations daily) for selected stations	17
	Mean monthly and annual	112,120,132
	Mean monthly, North Atlantic, South Atlantic, North Pacific, South Pacific, and Indian Oceans	69
	Mean, and distribution of, for synoptic hours	86
	Occurrences of relative humidity-temperature-wind speed combinations	95
	Percent frequencies by hour of day	95
	Percent frequency by hour, monthly and annual, for coastal marine areas	60,64
	Percent frequency by 5° F temperature increments, monthly and annual, for coastal marine areas	60,64

RIVER GAGE DATA

Daily :	River gage readings	43
Monthly :	Highest and lowest readings, and dates	43

RIVER GAGE DATA (CONT'D) — Page

Long Period : Highest river gage readings, and dates 43

SOIL MOISTURE

Weekly : Crop moisture index 21,49

Monthly : Palmer drought index 49

SOIL TEMPERATURE

Daily : Maximum, minimum, and at observation time for selected depths 3

Weekly : Averages (charts) 49

Monthly : Averages and extremes, for selected depths 3,5

Annual : Averages and extremes, for selected depths 5

SOLAR RADIATION

Hourly : Totals 39

Daily : Totals 11,39
Intensities 15

Monthly : Average of daily values 11,39,86

Annual : Average of daily values 12,86

Long Period : Monthly and annual averages 86,112,117

SUNSHINE

Daily : Totals, hours/minutes 31
Percent of possible 31

Monthly : Totals, hours/minutes 17,31
Percent of possible 2,13,17,31, 33,73
Percent of long-term average 38

Annual : Totals, hours 17
Percent of possible 17,33,73

Long Period : Monthly and annual average number of hours, percent of possible 73,112,127
Monthly and annual mean, percentage of possible 18,33,73, 87,112

TEMPERATURE, SURFACE AND UPPER AIR

Hourly or 3-hourly : Dry- and wet-bulb for each hour 30,32
Averages of dry- and wet-bulb for each hour 30,31
Occurrences of temperature-relative humidity-wind speed combinations 8,30

Daily : Normals of maximum, minimum, and average (1941-1970) 97
Average and departure from normal 31
Maximum and minimum 3,20,31
24-hour averages of dry- and wet-bulb 30
Coded values at 1200 GMT for Northern Hemisphere 48
Irregular air and sea temperature values during gale conditions in the North Atlantic and North Pacific Oceans and the Great Lakes 37
Irregular observations of temperature, pressure, density, and speed of sound at standard heights 25

TEMPERATURE, SURFACE AND UPPER AIR (CONT'D)

		Page
Weekly	Average and departure from normal	51
Monthly	Average	2,31,33,34, 38,52,73,77, 82,85,102, 106,116
	Average for States, Regions, and Nation weighted by area	121
	Normals of maximum, minimum and average (1941-1970)	18,33,87, 89,106,117
	Average, and departure from normal	2,4,13,31, 52,73
	Average maximum, average minimum	2,13,31, 33,73,82, 102,116
	Maximum and date, minimum and date	2,13,31,33
	Highest and lowest within state, date, and station	1,12
	Frequency by 1°C increments for selected oceanic areas	55
	Frequency of sea surface by 1°C increments for selected oceanic areas	55
	Number of days maximum 90°F or above; 32°F or below	2,13,31,33
	Number of days minimum 32°F or below; 0°F or below	2,13,31,33
	Mean values at standard pressure surfaces	8,14,38
	Average air and sea temperatures at U. S. Ocean Buoys	37
	Average temperature, pressure, density, and speed of sound at constant heights	26
Annual	Average	4,16,33,34, 73,82,85,102, 106,116
	Average for States, Regions, and Nation weighted by area	121
	Normal maximum, minimum and average (1941-1970)	33,87,89, 106,117
	Average maximum, average minimum	16,33,34,82, 102,116
	Maximum and date, minimum and date	5,16,33
	Frequency by 1°C increments for selected oceanic areas	55
	Frequency of sea surface by 1°C increments for selected oceanic areas	55
	Number of days maximum 90°F or above; 32°F or below	16,33
	Number of days minimum 32°F or below; 0°F or below	16,33
	Dates of last spring minimum at or below 16°F, 20°F, 24°F, 28°F, and 32°F	5
	Dates of first fall minimum at or below 16°F, 20°F, 24°F, 28°F, and 32°F	5
	Number of days between last spring and first fall minimums 16°F, 20°F, 24°F, 28°F, and 32°F	5
Long Period	Mean hourly, by months	85,104
	Average daily highest and lowest	87,97
	Highest and lowest of record for each day and year	85
	Highest daily minimum, and lowest daily maximum, and dates	85
	Averages and extremes of daily maximums and minimums at Antarctic and Arctic stations	8
	Monthly means, North Atlantic, South Atlantic, North Pacific South Pacific, and Indian Oceans	69
	Monthly extremes and temperature-humidity index, North Atlantic, South Atlantic, North Pacific, South Pacific, and Indian Oceans	69
	Monthly mean wet-bulb for North Atlantic, South Atlantic, North Pacific, South Pacific, and Indian Oceans	69
	Monthly means, sea surface, for North Atlantic, South Atlantic, North Pacific, South Pacific, and Indian Oceans	69
	Monthly and annual means	8,18,33,73,75, 76,81,87,97, 101,106, 112,116
	Monthly and annual means for state climatic divisions	98
	Monthly and annual means for States, Regions, and Nation weighted by area	121

TEMPERATURE, SURFACE AND UPPER AIR (CONT'D)

		Page
Long Period :	Monthly and annual mean maximum, and mean minimum	18,33,73,75, 77,81,87,97, 101,102,111,112, 116,124,132
	Highest and lowest, monthly and annual	77,101,111, 116,124,132
	Record highest and lowest	17,18,33,73,75, 81,87,111
	Mean number of days maximum 90°F or above	17,33,78,81, 87,112,120, 124,132
	Mean number of days maximum 90°F, 65°F, 32°F or above	101
	Mean number of days minimum 32°F or below, 0°F or below	17,18,33,81, 87,124,132
	Mean number of days minimum 45°F, 32°F, 0°F or below	101
	Mean date of first 32°F in fall, last in spring	112,115,120
	Mean length of freeze-free period	112,120
	Freeze probabilities	91
	Means, extremes, and percentiles of air temperature, by hour, for coastal marine areas	60
	Critical low temperature with means and extremes data, and length of seasons	85
	Distribution of monthly average, average maximum, and average minimum	85
	Mean, and distribution of, dry- and wet-bulb values	85,115
	Occurrences of temperature-relative humidity-wind speed combinations	8,95
	Percentage distribution of occurrences of dry-bulb versus wind speed	85
	Percentage frequencies of temperature-relative humidity index	85
	Average monthly temperatures, pressure, density, and speed of sound at constant heights	27
	Monthly extremes and standard deviations at constant pressure surfaces	109,127,128

TURBIDITY (ATMOSPHERIC)

Daily :	Irregular average and minimum values	23
Monthly :	Monthly and/or annual mean	38,101,124
Long Period :	Monthly mean precipitable water (tables and graphs)	127

VISIBILITY

Hourly or 3-hourly :	Values for each hour	32
	Occurrences of ceiling-visibility combinations	32
	Occurrences of visibility by 16-point wind direction	32
Daily :	Coded values at 1200 GMT for Northern Hemisphere	48
	Irregular observations of visibility during gale conditions over the North Atlantic and North Pacific Oceans and the Great Lakes	37
Monthly :	Percentage frequencies of selected visibilities for oceanic areas	55
Annual :	Percentage frequencies of selected visibilities for oceanic areas	55
Long Period :	Mean monthly visibility charts for North Atlantic, South Atlantic, North Pacific, South Pacific, and Indian Oceans	69
	Mean number of days, by hour, monthly and annual with selected visibilities	104
	Monthly occurrences of ceiling-visibility combinations at Antarctic and Arctic stations	8

VISIBILITY (CONT'D)

		Page
Long Period :	Percentage frequencies of ceiling-visibility combinations	8,86,95,103, 110,124, 132,133
	Percentage frequencies of selected visibilities by hour for coastal marine areas	60,64
	Percentage frequencies of wind direction versus wind speed with selected visibilities, monthly and annual, for coastal marine areas	60,64

WEATHER AND/OR OBSTRUCTIONS TO VISION

Hourly or 3-hourly :	Occurrences of selected weather types	32,46
	Occurrences of selected weather types by 16-point wind directions	32
Daily :	Coded weather at 1200 GMT for Northern Hemisphere	48
	Occurrences of selected weather types that restricted visibility to 1/4 mile or less	31
	Occurrences of thunderstorms or distant lightning	31,46
	Irregular observations of current weather during gale conditions in the North Atlantic and North Pacific Oceans and the Great Lakes	37
Weekly :	Summary of National Weather Conditions	21,50
Monthly :	Number of days with thunderstorms or heavy fog	13,31,33
	Occurrences of severe storms and unusual weather phenomena	46
	Summary of severe storms and unusual weather phenomena	14,46
	Summary of National Weather Conditions	11
	Frequency of specified weather elements for oceanic areas	55
Annual :	Number of days with thunderstorms or heavy fog	16,33
	Frequency of specified weather elements for oceanic areas	55
Long Period :	Mean monthly and annual number of days with thunderstorms or heavy fog	17,33,87, 101,115, 120,124
	Mean number of days with specified weather elements	101,104
	Percentage frequency of weather occurrence by wind direction, monthly and annual, for coastal marine areas	59,64
	Statistics on tornadoes, waterspouts, and funnel clouds, including number of occurrences, deaths, injuries, and property damage, 1916-1978	11

WIND DIRECTION AND SPEED

Hourly or 3-hourly :	Values for each hour	30,32
	Average hourly wind speed	30,31
	Occurrences of wind speed by 16-point wind direction	30,32
	Occurrences of wind speed-relative humidity-temperature combinations	30,32
Daily :	Average hourly speed	31
	Resultant direction and speed	31
	Fastest mile and direction	31
	Speed and direction at 1200 GMT for Northern Hemisphere	48
	Speed and direction at standard pressure surfaces at 0000 and 1200 GMT for Northern Hemisphere	8,48
	Speed and direction at selected pressure levels at 0000, 0600 1200, and 1800 GMT for Northern Hemisphere	47
	Irregular observations of direction and speed during gale conditions in the North Atlantic, North Pacific Oceans and the Great Lakes	37
Monthly :	Average hourly speed	2,31,33,37,73
	Resultant direction and speed	2,13,31,33

WIND DIRECTION AND SPEED (CONT'D)

		Page
Monthly :	Percent frequency direction (8-points) versus speed groups	37
	Fastest mile, direction, and date	2,13,31,33,49
	Resultant speed and direction at standard pressure surfaces	14,38
	Frequency of occurrence of Beaufort wind force and direction by 30 degree sectors for selected oceanic areas	55
Annual :	Average hourly speed	16,33,73
	Resultant direction and speed	16,33
	Fastest mile, direction, and date	16,33
	Frequency of occurrence of Beaufort wind force and direction by 30 degree sectors for selected oceanic areas	55
Long Period :	Monthly and annual mean hourly speed	18,33,87,101, 104,112,115,124
	Monthly and annual prevailing direction	33,73,87,101, 112,115,124
	Fastest mile	17,18,33,73,87, 101,112,124
	Number of days fastest mile exceeded specified limits	132
	Annual wind rose	95,104,112,120
	Surface wind roses for North Atlantic, South Atlantic, North Pacific, South Pacific, and Indian Oceans	69
	Occurrences of wind speed-temperature-relative humidity combinations	95
	Percentage frequencies of wind speed by hour of day	59,64,95,104
	Percentage frequencies of wind direction and speed, and mean speed	59,64,85, 95,104
	Percent frequency of wind speed and direction versus sea height, monthly and annual, for coastal marine areas	60,64
	Percentage frequency of total cloud amount by wind direction, monthly and annual, for coastal marine areas	59,64
	Percentage frequency of wind direction versus occurrence of precipitation, monthly and annual, for coastal marine areas	59,64
	Percentage frequency of wind direction versus wind speed with selected visibilities, monthly and annual for coastal marine areas	60,64
	Occurrences of wind speed-temperature combinations at Antarctic and Arctic stations	8,10
	Monthly occurrences of specified wind speeds by 16-point direction at Antarctic and Arctic stations	8,10
	Derived estimates of some statistical parameters of wind distribution over the Northern Hemisphere	129
	Mean vector winds, and standard vector deviations	109,135
	Mean vertical vector wind shear, and standard deviations	109,135
	Vertical wind profiles for selected stations	135
	Zonal and meridional wind components, and standard deviations for standard pressure surfaces	109

PART I

CURRENT SERIAL PUBLICATIONS

I

PART II

MARINE PUBLICATIONS

II

PART III

DECENNIAL AND INTERMITTENT PUBLICATIONS

III

PART IV

SPECIAL PUBLICATIONS

IV

PART V

DATA CATALOGS AND INDEXES

V

CLIMATOLOGICAL DATA

This publication presents basic climatological data in its monthly and annual issues. It is published for each State or combination of States. The issues for combined States are: Hawaii-Pacific; Maryland-Delaware; New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont); and Puerto Rico and the U.S. Virgin Islands. Pages 6 and 7 contain historical listings of these publications. This series was first published by the Weather Bureau in the late 1890's as the CLIMATE AND CROP SERVICE OF THE WEATHER BUREAU. In February 1906, the title was changed to CLIMATOLOGICAL SERVICE OF THE WEATHER BUREAU. Beginning in July 1909, and continuing through December 1913, the monthly data were included as a part of the MONTHLY WEATHER REVIEW, but were presented on a drainage district basis. The annual data, however, were not published under this title. Beginning with January 1914 CLIMATOLOGICAL DATA has been published monthly and annually. A West Indies and Caribbean issue was published through 1952. It was resumed with January 1960 data and was published monthly and annually through 1967 when it was again terminated.

The current monthly issue contains a temperature and precipitation extremes table (Exhibit 1), published since January 1958; a supplemental data table (Exhibit 2); a summarized station and divisional data table (Exhibit 3); a daily precipitation table (Exhibit 4); a daily temperature table (Exhibit 5); a daily snowfall and snow on ground table (Exhibit 6); evaporation and wind table (Exhibit 7); daily soil temperature (Exhibit 8); and a station index table (Exhibit 9). Monthly and seasonal heating-degree days (Exhibit 10) and monthly and seasonal snowfall (Exhibit 11) are published in the July issue only. The monthly and seasonal heating degree days were published in the June issue only from 1951 through 1961, and the monthly and seasonal snowfall in the June issue only from 1950 through 1961. When unusual or outstanding weather has occurred within the state during the month, a narrative summary of the events may be included. The June and December issues normally carry late reports and corrections.

The annual issue of CLIMATOLOGICAL DATA presents tables as follows: monthly and annual average temperatures and departures from normal (Exhibit 12); monthly and annual total precipitation and departures from normal (Exhibit 13); temperature extremes and freeze data (Exhibit 14); monthly and annual total evaporation and wind movement (Exhibit 15); monthly and annual average and extreme soil temperatures at selected depths (Exhibit 16); precipitation measured in storage gages (Exhibit 17 - 1976-1977 data first published in the annual 1977 issue); and a station index (Exhibit 18).

EXHIBIT 1

OREGON

TEMPERATURE AND PRECIPITATION EXTREMES

HIGHEST TEMPERATURE:	PELTON DAM	109	DATE	25
LOWEST TEMPERATURE:	CHEMULT	28	DATE	11
GREATEST TOTAL PRECIPITATION:	KENT	2.90		
LEAST TOTAL PRECIPITATION:	2 STATIONS	.00		
GREATEST 1 DAY PRECIPITATION:	HEADWORKS PTLD WTR BUR	1.99	DATE	16

EXHIBIT 2

SUPPLEMENTAL DATA

	WIND (SPEED - M.P.H.)						RELATIVE HUMIDITY AVERAGES- PERCENT (STANDARD OF TIME: PACIFIC)				NUMBER OF DAYS WITH PRECIPITATION							PERCENT OF POSSIBLE SUNSHINE	AVERAGE (TENTHS) SKY COVER SUNRISE TO SUNSET
	RESULTANT DIRECTION	RESULTANT SPEED	AVERAGE	FASTEST MILE	DIRECTION OF FASTEST MILE	DATE OF FASTEST MILE	04	10	16	22	TRACE	.01-.09	.10-.49	.50-.99	1.00-1.99	2.00 AND OVER	TOTAL		
ASTORIA W50 AP	13	1.6	8.4	30++	18	10	85	82	74	82	2	7	9	2	1	0	21	-	7.3
BURNS W50 CI	-	-	-	44	W	04	77	74	-	-	5	6	1	0	0	0	12	-	6.8
EUGENE W50 AP	-	-	-	23++	18	10+	-	88	79	90	5	10	2	2	1	0	20	-	8.5
MEDFORD W50 AP	32	0.7	3.0	23++	34	04	92	92	76	89	15	5	2	0	0	0	22	-	8.3
PENDLETON W50 AP	23	3.8	8.9	33++	24	22	78	75	77	81	5	5	3	0	1	0	14	-	6.7
PORTLAND W5FO AP	16	2.4	7.4	38	E	31	91	87	79	87	5	10	3	2	0	0	20	30	8.0
SALEM W50 AP	19	2.7	6.1	22++	18	10	91	90	82	90	5	11	1	3	0	0	20	-	8.2
SEXTON SUMMIT W50	-	-	-	45	NW	04	76	76	72	75	4	9	2	0	0	0	15	-	-

EXHIBIT 3

MONTHLY SUMMARIZED STATION AND DIVISIONAL DATA

OREGON
DECEMBER 1978

STATION	TEMPERATURE									NO. OF DAYS				PRECIPITATION							NO. OF DAYS		
										MAX.		MIN.						SNOW, SLEET					
	AVERAGE MAXIMUM	AVERAGE MINIMUM	AVERAGE	DEPARTURE FROM NORMAL	HIGHEST	DATE	LOWEST	DATE	DEGREE DAYS	90° OR ABOVE	32° OR BELOW	32° OR BELOW	0° OR BELOW	TOTAL	DEPARTURE FROM NORMAL	GREATEST DAY	DATE	TOTAL	MAX. DEPTH ON GROUND	DATE	.10 OR MORE	.50 OR MORE	1.00 OR MORE
METOLIUS 1 W																							
MITCHELL	37.9	19.2	28.6		60	5	-10	31	1122	0	8	30	2	1.18		.70	5		2	31+	2	1	0
OCHOCO RANGER STATION	32.5	7.6	20.1	- 8.0	45	5	-10	31	1387	0	10	31	7	1.22	- 1.46	.37	1		6	31	5	0	0
OO RANCH	34.5M	13.9M	24.2M		55	4	- 8	30+	1257	0	13	31	3	.57		.18	21	4.9	3	21+	3	0	0
PRISLEY	41.1M	13.6M	27.4M	- 5.5	56	4			1159	0	8	29	4	.18	- 1.27	.11	5	1.1	T	20+	1	0	0
PAULINA	34.1	10.3	22.2		57	4	-15	30	1320	0	10	31	6	0 1.63		.42	4	7.5	0		7	0	0
PELTON DAM	43.8	21.3	32.6		60	4	0	31	996	0	4	27	1	.40		.21	4	2.0	2	31	1	0	0
PINE MTN OBSERVATORY	26.2	9.2	17.7		45	4	-18	31	1461	0	22	31	6	.82		.56	4	7.0	6	23+	2	1	0
P RANCH REFUGE	37.8M	15.9M	26.9M		55	4	-11	30	1163	0	10	29	1	.95	- .26	.42	17	9.0	7	17	2	0	0
PRINEVILLE 4 NW	38.9	15.7	27.3	- 6.2	58	4	- 1	30	1163	0	5	29	2	.76	- .62	.35	21	9.8			2	0	0
REDMOND 2 W	38.3M	17.6M	28.0M	- 6.5	57	5	- 6	30	1133	0	7	29	2	.78	- .42	.46	5	2.6	1	31+	3	0	0
REDMOND FAA AP	36.7	14.8	25.8	- 7.6	60	4	-20	31	1208	0	8	31	3	.65	- .53	.43	4	3.6	2	31	2	0	0
SISTERS	40.0M	16.4M	28.2M		50	3+			1130	0	8	27	4	1.22		.56	4	2.0	0		4	1	0
SPRAGUE RIVER	36.8M	9.6M	23.2M		54	4	-14	19	1289	0	8	31	9	.52		.14	5	4.0	2	20+	3	0	0
SQUAW BUTTE EXP STA	33.1	15.0	24.1	- 4.4	53	5	- 7	30	1261	0	13	30	1	.55	- .93	.25	21	9.3	4	22+	3	0	0
SUNTEX	32.5M	11.3M	21.9M		53	4	-15	30	1330	0	17	31	5	.37		.20	31	4.5	1	31+	1	0	0
VALLEY FALLS 3 SSE	33.4M	15.3M	24.4M		45	25+	-10	31	1247	0	11	29	2	.51		.32	9				2	0	0
WAGONTIRE	32.9	12.9	22.9		52	4	- 9	30	1298	0	14	31	5	.27		.10	4	10.0	4	21	1	0	0
WHITEHORSE RANCH	38.8	15.2	27.0		52	5+	-13	30	1170	0	7	29	4	.53		.15	5	5.5	3	17	3	0	0
DIVISION			25.5	- 6.2										.66	- 1.06			5.0					
* * * NORTHEAST 08																							
AUSTIN 3 S	31.3	4.1	17.7		46	5	-34	31+	1460	0	15	31	13	2.10	- .72	.52	5	17.0	15	18	5	1	0
BAKER FAA AP	26.6	3.3	15.0		46	24	-39	30	1544	0	22	31	10	1.16		.62	4	8.8	7	22+	2	1	0
BAKER KBKR	27.3	10.5	18.9	-10.5	46	24	-19	30	1425	0	21	31	5	.64	- .59	.23	17		6	10	4	0	0
COVE	33.3	15.8	24.6		47	24	-11	31+	1245	0	12	29	4	2.60		1.20	4		9	17	6	2	1
ELGIN	33.3	15.8	24.6	- 7.3	48	24	-16	30	1247	0	11	28	8	3.49	.14	1.17	4	17.1	11	19+	5	3	1
ENTERPRISE	26.0	6.2	16.1	-10.6	43	24	-22	30	1510	0	19	31	9	1.50	.38	.57	4	19.5	7	18	5	1	0
ENTERPRISE 20 NNE	32.3M	11.2M	21.8M		47	24	-20	30	1331	0	14	31	6	2.07		.75	4	7.0	8	18	4	1	0
HALFWAY	27.1	4.1	15.6	-11.9	46	24	-28	30	1524	0	22	31	15	2.92	- .32	1.43	4	14.0	16	23+	5	2	1
HUNTINGTON	34.0	16.3	25.2	- 7.1	45	24+	- 5	30	1228	0	8	30	3	.78	- 1.12	.30	17	6.3	6	19+	3	0	0
JOHN DAY	36.5	15.1	25.8		51	5	-12	30	1210	0	7	31	4	1.61		.68	5	11.3	6	5	4	1	0
LA GRANDE	33.1	18.3	25.7	- 7.9	48	24	- 9	30	1210	0	10	29	3	0 2.71	.23	.59	4	6.5	5	12+	8	2	0
LONG CREEK	34.6	12.7	23.7		48	4	-15	30	1273	0	7	31	6	1.48		.45	5				5	0	0
MASON DAM	30.5	8.3	19.4		44	24+	-25	29	1407	0	18	31	7	1.73		.80	4	11.5	7	18	5	1	0
MINAM 7 NE																							
MONUMENT 2	35.7M	15.3M	25.5M		50	25	-10	30	1217	0	9	29	4	2.01		.98	6				4	1	0
RICHLAND	35.7	14.9	25.3		45	5	-12	30	1222	0	8	31	2	2.48		.81	5	3.5	3	31+	5	2	0
SENECA	27.4	.2	13.8		41	5+	-41	30	1581	0	20	31	15	1.44		.60	5	21.5	11	19+	3	1	0
UKIAH	31.0	5.5	18.3		45	25	-32	31+	1443	0	15	30	14	1.99	- .28	.72	5	15.0	8	5	5	1	0
UNION EXP STA	32.3	17.6	25.0	- 8.2	47	25	-10	31+	1233	0	10	30	3	1.66	.35	.90	5	6.7	6	18	4	1	0
UNITY	29.1M	5.8M	17.5M		48	4	-23	30	1486	0	19	29	8	0 1.09	- .23			7.1	6	22+		0	0
WALLA WALLA 13 ESE																							
WALLOWA	30.3M	12.3M	21.3M	- 7.6	48	24+	-14	29	1347	0	16	30	8	1.96	- .29	.74	4	14.0	11	19+	4	1	0
DIVISION			21.0	- 8.4										1.87	- .45			11.7					

EXHIBIT 4

DAILY PRECIPITATION

OREGON
JULY 1978

STATION	TOTAL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
* * * COASTAL AREA 01																																
ALSEA F H FALL CREEK	.72	T	.01	T	.02						T						.87	.02														
ASTORIA WSO AP //R	.90	T		T				T	T	.09	.04	T				.38	.09	.02	T					T	T	T	.22	.06				T
BANDON 2 NNE	.38		T	.04												.23	.09							T								
BANDERINGS	.20															.08								.02	.04	.02					.03	.01
CAPE BLANCO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CLOVERDALE I NW	.98	.08	.14	.08						.03	.08	T				.10	.38										.08	.03				
COQUILLE CITY	.39	T	.11													T	.28															
DORA 2 W	.67	.18	.18	.01												.46	.06															
ELKTON 3 SW	.80	.09	.31													.08	.12															
FAIRVIEW 4 NE	.78		.21														.57															

EXHIBIT 5

DAILY TEMPERATURES

OREGON
JULY 1978

STATION		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AVERAGE
EUGENE WSO AP	MAX	66	67	65	70	79	84	84	75	72	74	76	84	91	94	68	75	75	81	86	93	100	100	94	93	101	79	78	80	91	88	87	82.3
	MIN	56	55	55	48	40	48	50	53	46	43	42	45	52	58	56	50	48	48	47	52	53	55	59	49	53	55	53	47	48	52	46	50.4
FERN RIDGE DAM	MAX	71	67	68	64	67	78	83	81	75	72	73	74	82	88	92	68	71	75	80	85	94	98	98	90	92	100	76	78	79	91	88	80.6
	MIN	56	55	54	53	46	45	52	51	49	46	45	47	51	54	55	55	52	51	51	54	56	59	58	52	57	58	55	52	54	54	51	52.5
FOREST GROVE	MAX	75	73	66	64	68	74	84	83	77	74	69	68	85	89	92	72	68	71	79	85	93	97	99	93	89	96	83	74	83	90	88	80.7
	MIN	57	55	55	54	51	53	55	55	57	49	45	51	54	56	62	58	54	49	58	59	61	58	59	51	51	64	52	54	55	55	48	54.7

EXHIBIT 6

SNOWFALL AND SNOW ON GROUND

OREGON
DECEMBER 1978

STATION		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
* * * COASTAL AREA 01																																
ASTORIA WSO AP	SNOWFALL				T										T			T	.1			.2									2.2	
	SN ON GND																															2
	WTR EQUIV																														.1	.1
CLOVERDALE 1 NW	SNOWFALL																					T										.1
	SN ON GND																															

EXHIBIT 7

EVAPORATION AND WIND

OREGON
JULY 1978

STATION		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	TOTAL OR AVG.
* * * WILLAMETTE VALLEY 02																																	
CORVALLIS STATE UNIV	EVAP	.15	.09	.04	.05	.12	.22	.24	.22	.18	.14	.13	.19	.21	.25	.26	.09	.13	.20	.23	.25	.45	.38	.27	.31	.31	.29	.20	.17	.17	.33	.30	6.57
	WIND	21	32	15	19	16	41	41	40	34	29	15	34	26	22	20	48	45	67	48	42	75	73	22	31	51	28	40	41	42	58	43	1159
	MAX	79	72	71	67	74	84	88	89	83	73	74	81	86	91	93	72	74	78	85	88	87	92	93	93	89	94	79	81	82	86	87	82.7
	MIN	58	57	56	56	52	55	58	59	52	52	53	54	54	59	63	58	54	53	55	58	60	59	61	58	57	62	57	56	57	59	56	56.7

EXHIBIT 8

DAILY SOIL TEMPERATURES

OREGON
DECEMBER 1978

STATION	DEPTH	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AVERAGE
CORVALLIS, OSU	(IN)																																	
	2	MAX	47	49	49	48	48	45	37	39	37	42	46	45	39	38	41	38	37	40	37	35	36	42	43	47	46	40	36	37	34	33	32	40.7
		MIN	44	44	44	43	39	37	36	36	34	37	39	37	36	34	35	34	34	36	34	34	33	36	38	43	37	36	35	34	33	32	30	36.6
	4	MAX	47	48	47	47	47	43	41	38	37	40	45	45	40	38	40	38	39	39	38	36	36	39	41	45	41	41	38	38	36	36	34	40.6
		MIN	46	46	45	45	40	40	38	37	37	37	40	39	37	37	37	37	37	37	36	36	35	35	38	41	41	38	37	36	35	34	33	38.3
	8	MAX	45	45	45	45	45	42	40	39	38	39	42	43	40	38	37	37	37	37	37	37	36	37	40	42	43	40	38	38	36	36	34	39.6
		MIN	45	45	44	45	42	40	39	38	38	38	39	40	38	37	37	37	37	37	37	36	36	35	37	40	40	38	37	36	35	34	34	38.4

EXHIBIT 9

STATION INDEX

OREGON
JULY 1978

STATION	INDEX NO.	DIVISION	COUNTY	DRAINAGE 1	LATITUDE	LONGITUDE	ELEVATION	OBSERVATION TIME AND TABLES: TEMP.	PRECIP.	EVAP.	SPECIAL (SEE NOTES)	OBSERVER
ADEL	0036	07	LAKE	5	42 11	119 54	4580	5P	5P			OR STATE HIGHWAY DEPT
ALKALI LAKE	0118	07	LAKE	5	42 58	120 00	4332	5P	5P		H	STATE HIGHWAY DEPT
ALLEGANY	0126	01	COOS	1	43 25	124 02	35				C	WEYERHAEUSER COMPANY

EXHIBIT 10

MONTHLY AND SEASONAL HEATING DEGREE DAYS

SEASON OF 1977 - 1978

OREGON

STATION	JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL	NORMALS JULY-JUNE
* * *														
SOUTH CENTRAL 07														
ADEL	33	31	194		726	896			529	597		151		
ALKALI LAKE									646	659		181		
ANDREWS WESTON MINE	22	37	185	379	741	883	967	835	581	615	454	110	5809	
BARNES STATION	95	86	316	545	876	994	985	832	695	703	562	247	6936	
BEND	140	74	363	556	868	929	948	782	694	667	551	204	6776	7117

EXHIBIT 11

TOTAL SNOWFALL AND NUMBER OF DAYS WITH ONE INCH OR MORE ON GROUND

SEASON OF 1977 - 1978

OREGON

STATION		JULY	AUG	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	TOTAL	TOTAL PRECIPITATION
GIBBON	SNOWFALL					12.8	16.4	8.6	3.3	5.4	T	T		46.5	28.78
	1 IN ON GD					6	10	8		1				25	
HEPPNER	SNOWFALL					15.0	6.0	7.0	1.0	2.2				31.2	17.00
	1 IN ON GD					7	8	7		2				24	

EXHIBIT 12

Table 1

AVERAGE TEMPERATURES AND DEPARTURES FROM NORMAL

OREGON
1978

Station	January Temperature	January Departure	February Temperature	February Departure	March Temperature	March Departure	April Temperature	April Departure	May Temperature	May Departure	June Temperature	June Departure	July Temperature	July Departure	August Temperature	August Departure	September Temperature	September Departure	October Temperature	October Departure	November Temperature	November Departure	December Temperature	December Departure	Annual Temperature	Annual Departure
* * *																										
COASTAL AREA 01																										
ASTORIA WSO AP	44.0	3.4	46.0	2.4	47.0	2.6	48.8	1.0	52.3	.0	59.4	2.9	60.9	.9	61.5	1.2	58.1	- .3	54.3	1.5	41.7	- 4.8	37.6	- 5.2	51.0	.5
BANDON 2 NNE	49.5	4.2	49.1	2.4	51.2	4.3	50.1	1.2	52.4	.2	58.2	2.3	59.3	1.8	59.3	1.5	58.5	1.9	55.9	2.3	45.4	- 4.6	41.9	- 5.0	52.6	1.1
BROOKINGS	50.4M	3.4	48.6	.3	52.7	4.0	M		54.2	2.1	57.3	- .2	59.6	1.1	59.5	.8	59.9M	.3	58.8	3.0	49.2	--2.6	44.9	- 3.6	-	
CAPE BLANCO	50.4		48.2		50.5		48.9		50.8		54.6		54.2		54.8		57.1		53.9M		-		42.8M		-	
CLOVERDALE 1 NW	46.1	3.5	48.3	2.8	49.8	3.9	48.9	.3	53.2	.1	59.7	2.7	61.4	1.4	61.7	1.4	59.7	.6	56.9	2.6	44.4	- 4.0	39.6	- 4.9	52.5	.9

EXHIBIT 13

TABLE 2

TOTAL PRECIPITATION AND DEPARTURES FROM NORMAL

OREGON
1978

STATION	JANUARY PRECIP.	JANUARY DEPARTURE	FEBRUARY PRECIP.	FEBRUARY DEPARTURE	MARCH PRECIP.	MARCH DEPARTURE	APRIL PRECIP.	APRIL DEPARTURE	MAY PRECIP.	MAY DEPARTURE	JUNE PRECIP.	JUNE DEPARTURE	JULY PRECIP.	JULY DEPARTURE	AUGUST PRECIP.	AUGUST DEPARTURE	SEPTEMBER PRECIP.	SEPTEMBER DEPARTURE	OCTOBER PRECIP.	OCTOBER DEPARTURE	NOVEMBER PRECIP.	NOVEMBER DEPARTURE	DECEMBER PRECIP.	DECEMBER DEPARTURE	ANNUAL PRECIP.	ANNUAL DEPARTURE
MADRAS	2.41	1.08	.57-	.26	.87	.18	2.23	1.70	.43-	.61	.86-	.24	.38	.05	1.04	.70	.37-	.11	.00-	.80	1.04-	.37	.31-	1.00	10.51	.32
MADRAS 2 N	2.75		.83		.74		2.26		.56		1.04		1.45		1.05		.47		.00		.83		.53		13.41	
MALHEUR REFUGE HDQ	E 1.03	.86	.27-	.40	2.07	1.40	2.23	1.73	.44-	.74	.96-	.14	.33	.09	.89	.53	1.32	.85	T -	.77	.83-	.29	.38-	.62	E 11.55	2.48
MALIN 5 E	.06		.53		2.52		3.53		.30		.56		T		.60		.45		.00		.97		.38		10.98	
METOLIUS 1 W	2.50		.64		.72		2.08		.58		1.05		.57		1.11		.30		.00		.92		E .48		E 11.85	

EXHIBIT 14

Table 3

TEMPERATURE EXTREMES AND FREEZE DATA

OREGON 1978

Station	Highest	Date	Lowest	Date	Last spring minimum of 16° or below Date	Temp.	20° or below Date	Temp.	24° or below Date	Temp.	28° or below Date	Temp.	32° or below Date	Temp.	First fall minimum of 32° or below Date	Temp.	28° or below Date	Temp.	24° or below Date	Temp.	20° or below Date	Temp.	16° or below Date	Temp.	Number of days between dates 16° or below	20° or below	24° or below	28° or below	32° or below
* * *																													
NORTHERN CASCADES 04																													
BELKNAP SPRINGS 8 N	100	8- 8	5	12-31	NONE		NONE		2-13	24	4-24	26	5- 7	31	10-22	31	11- 5	28	11-11	19	11-11	19	11-13	15			271	195	168
DETROIT DAM	99	8- 9	12	12-31+	NONE		NONE		NONE		2-11	28	3- 2	32	11-11	27	11-11	27	11-13	24	12-29	20	12-30	12			273	254	

EXHIBIT 15

Table 4

TOTAL EVAPORATION AND WIND MOVEMENT

OREGON 1978

Station		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
* * *														
SOUTHEAST 09														
MALHEUR BRANCH EXP STA	EVAP	-	-	-	4.278	7.66	8.83	11.18	9.41	5.42	3.96	-	-	-
	DEP	-	-	-	.48	1.69	1.09	1.41	1.32	.38	1.69	-	-	-
	WIND	-	-	-	19018	2127	1216	1958	1864	1582	1605	-	-	-
	MAX	-	-	-	64.7	76.4	87.1	89.4	86.4	73.5	61.2	-	-	-
	MIN	-	-	-	41.7	45.7	54.6	58.8	55.1	49.3	39.6	-	-	-

EXHIBIT 16

SOIL TEMPERATURES

OREGON 1978

Station	Depth	Time	January Average	January Extremes	February Average	February Extremes	March Average	March Extremes	April Average	April Extremes	May Average	May Extremes	June Average	June Extremes	July Average	July Extremes	August Average	August Extremes	September Average	September Extremes	October Average	October Extremes	November Average	November Extremes	December Average	December Extremes	Annual Average	Annual Extremes
CORVALLIS, OSU	(IN)																											
	2		42.5	50 33	46.4	56 35	50.7	67 38	53.6	70 38	58.6	84 45	71.2	95 50	75.6	97 59	73.3	97 56	63.8	84 52	57.8	74 40	41.3	56 32	38.7	49 30	56.1	97 30
	4		42.8	48 35	45.9	52 37	49.7	61 39	52.9	63 45	57.0	75 48	68.9	86 56	73.7	90 62	71.9	90 58	62.5	76 54	57.3	69 44	41.9	53 35	39.5	48 33	55.3	90 33
	8		41.8	46 36	44.6	49 39	48.1	55 42	51.3	58 47	55.7	67 49	66.6	76 57	71.3	81 63	69.8	82 58	61.2	71 55	56.3	63 46	42.0	51 36	39.0	45 34	54.0	82 34

EXHIBIT 17

PRECIPITATION MEASURED IN STORAGE GAGES

ARIZONA 1976-1977

Station	Observation date	Amount since last obs.	Snow on ground
MORMON MOUNTAIN	1976		
	Sep 30		
	Oct 20	.42	
	Nov 3	.92	
	Dec 2	.36	
	27	.00	
MORMON MOUNTAIN-Cont'd	1977		
	Jan 31	.65	13
	Feb 14	.36	10
	28	1.19	12
	Mar 14	.10	5
	31	1.45	1
MORMON MOUNTAIN-Cont'd	1977		
	May 26	4.15	
	Jul 14	2.22	
	29	1.68	
	Sep 14	2.50	
	Oct 27	3.50	

EXHIBIT 18

STATION INDEX

OREGON 1978

Station	Index No.	Division No.	County	Drainage ‡	Latitude	Longitude	Elevation	Years of record Temp.	Precip.	Evap.	Opened or closed during yr. Month opened	Month closed	Refer to tables
EUGENE WSO AP R	2709	02	LANE	14	44 07	123 13	364	39	39				1 2 3 C
FAIRVIEW 4 NE	2775	01	COOS	14	43 15	124 02	195		5				2
FALLS CITY 2	2805	01	POLK	14	44 51	123 26	440	17	17				1 2 3
FERN RIDGE DAM	2867	02	LANE	14	44 07	123 18	386	34	34	35			1 2 34C

ALABAMA	-	Monthly, October 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
ALASKA	-	Monthly, January 1917 to date; Annual, 1915 to date.
ARIZONA	-	Monthly, January 1897 through June 1909; January 1914 to date. Annual, 1897 to date.
ARKANSAS	-	Monthly, September 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
CALIFORNIA	-	Monthly, January 1897 through June 1909; January 1914 to date. Annual, 1897 to date.
COLORADO	-	Monthly, May 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
FLORIDA	-	Monthly, April 1897 through June 1909; January 1914 to date. Annual, 1897 to date.
GEORGIA	-	Monthly, January 1897 through June 1909; January 1914 to date. Annual, 1897 to date.
HAWAII & PACIFIC	-	Monthly, January 1905 to date. Annual, 1905 to date. Note: Hawaii & Pacific were combined January 1973.
IDAHO	-	Monthly, September 1898 through June 1909; January 1914 to date. Annual, 1898 to date.
ILLINOIS	-	Monthly, December 1894 through June 1909; January 1914 to date. Annual, 1894 to date.
INDIANA	-	Monthly, August 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
IOWA	-	Monthly, January 1895 through December 1910; January 1914 to date. Annual, 1895 to date.
KANSAS	-	Monthly, October 1898 through June 1909; January 1914 to date. Annual, 1898 to date.
KENTUCKY	-	Monthly, August 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
LOUISIANA	-	Monthly, June 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
MARYLAND-DELAWARE	-	Monthly, January 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
MICHIGAN	-	Monthly, January 1897 through June 1909; January 1914 to date. Annual, 1897 to date.
MINNESOTA	-	Monthly, July 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
MISSISSIPPI	-	Monthly, April 1897 through June 1909; January 1914 to date. Annual, 1897 to date.
MISSOURI	-	Monthly, January 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
MONTANA	-	Monthly, September 1897 through June 1909; January 1914 to date. Annual, 1897 to date.
NEBRASKA	-	Monthly, August 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
NEVADA	-	Monthly, September 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
NEW ENGLAND	-	(Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont) Monthly, January 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
NEW JERSEY	-	Monthly, September 1896 through June 1909; January 1914 to date. Annual, 1896 to date.

NEW MEXICO	-	Monthly, January 1897 through June 1909; January 1914 to date. Annual, 1897 to date.
NEW YORK	-	Monthly, June 1889 through June 1909; January 1914 to date. Annual, 1897 to date.
NORTH CAROLINA	-	Monthly, September 1896 through May 1909; January 1914 to date. Annual, 1896 to date.
NORTH DAKOTA	-	Monthly, September 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
OHIO	-	Monthly, May 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
OKLAHOMA	-	Monthly, September 1896 through June 1909; January 1914 to date. Annual, 1898 to date. Also includes Indian Territories.
OREGON	-	Monthly, January 1897 through June 1909; January 1914 to date. Annual, 1896 to date.
PACIFIC	-	Monthly, January 1956 through December 1972. Annual, 1956 through 1972. Combined with Hawaii January 1973.
PENNSYLVANIA	-	Monthly, March 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
SOUTH CAROLINA	-	Monthly, October 1898 through June 1909; January 1914 to date. Annual, 1898 to date.
SOUTH DAKOTA	-	Monthly, October 1898 through June 1909; January 1914 to date. Annual, 1898 to date.
TENNESSEE	-	Monthly, May 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
TEXAS	-	Monthly, October 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
UTAH	-	Monthly, November 1898 through June 1909; January 1914 to date. Annual, 1898 to date.
VIRGINIA	-	Monthly, September 1896 through June 1909; January 1914 to date. Annual, 1896 to date.
WASHINGTON	-	Monthly, June 1897 through June 1909; January 1914 to date. Annual 1897 to date.
WEST VIRGINIA	-	Monthly, October 1898 through June 1909; January 1914 to date. Annual, 1898 to date.
WISCONSIN	-	Monthly, May 1896 through June 1909; January 1914 to date. Annual, 1897 to date.
WYOMING	-	Monthly, October 1898 through June 1909; January 1914 to date. Annual, 1898 to date.
PUERTO RICO & VIRGIN ISLANDS	-	Monthly, May 1899 through December 1920; January 1955 to date. Annual, 1901 through 1920; 1955 to date. Some data from January 1921 through December 1952 are contained in the West Indies and Caribbean publication. Data from January 1953 through December 1954 not published.
WEST INDIES & CARIBBEAN	-	Monthly, January 1921 through December 1952; January 1960 through December 1967; Annuals 1921 through 1952 and 1960 through 1967.

CLIMATOLOGICAL DATA FOR AMUNDSEN-SCOTT, ANTARCTICA

This publication was initially prepared under the current title with data for January 1971 through December 1972. It is a continuation of the series CLIMATOLOGICAL DATA FOR ANTARCTIC STATIONS that began with publication of data for the International Geophysical Year, July 1957 through December 1958. There are 14 volumes in this series as of mid-1979. Antarctic stations and the volumes in which their data appear are:

Amundsen-Scott, Volumes 1-14

Byrd, Volumes 1-11

Eights, Volume 8

Ellsworth, Volumes 1-5

Hallett, Volumes 1-7

Little America V, Volumes 1-2

Plateau, Volumes 1-7

USNS Eltanin, Volumes 9-10

Wilkes, Volumes 1-6

Tabular data presented in this publication include the following:

Monthly and annual percentiles and extremes, for each year, of station pressure and station temperature.

Percent of days, for each month and year, with various atmospheric phenomena.

Peak wind speed (knots) and direction for each day of each year.

Percent frequency of sky cover, and mean cloud amount, for the hours 00, 06, 12, and 18 GMT for each month.

Percent frequency of visibility (statute miles) for the hours 00, 06, 12, and 18 GMT for each month.

Percent frequency of various ceiling-visibility combinations for each month and year.

Percent frequency of various temperature-wind speed combinations for each month.

Percent frequency of wind direction versus wind speed and hour for each month.

Mean rawinsonde data for 00 and 12 GMT for each month.

A complete listing of standard level data (height, temperature, relative humidity, and wind direction and speed) for each rawinsonde observation taken at 00 and 12 GMT.

This publication is prepared and published periodically and is available from the National Climatic Center. Volumes published through 1978 cover the following periods:

1. July 1957 through December 1958

2. January through December 1959 plus all data prior to the International Geophysical Year (July 1957 through December 1958).

3. January through December 1960

4. January through December 1961

5. January through December 1962 plus late data for 1961

6. January through December 1963 plus rawinsonde data for 1957 through 1960 not available at the time of prior publications for Little America, Amundsen-Scott, Byrd, Ellsworth, Hallett, and Wilkes.

7. January through December 1964

8. January through December 1965 plus additional rawinsonde data for 1962 and 1963.

9. January through December 1966

10. January 1967 through December 1968

11. January 1969 through December 1970

12. January 1971 through December 1972

13. January 1973 through December 1973

14. January 1974 through December 1975, plus a climatological data summary of surface data collected at Amundsen-Scott over the period 1957 through 1975.

CLIMATOLOGICAL DATA FOR ARCTIC STATIONS

This three volume series of publications presents summarized meteorological observations for Arctic Stations. Issue Number 1 contains data for the International Geophysical Year July 1957 through December 1958; data for two stations---Drifting Station A and Drifting Station B--are summarized in this publication. Issues Number 2 - Volume T-3 (Ice Island) and Number 3 contain data from June 1966 through May 1968 and January 1968 through April 1971 respectively for Ice Island T-3. Tabular data presented in these issues are:

Average and extreme maximum and minimum daily temperatures (°F).
Average air temperature (°F).
Frequency of pressure by 10 millibar intervals.
Station pressure (mb).
Number of observations with occurrences of weather.
Days with rain, days with snow, rain amount (in), and snowfall (in).
Temperature and wind speed (°F and knots).
Three-hourly observations of wind speed (knots).
Ceiling-visibility (feet and miles).
Total cloud amount.
Rawinsonde data.

CLIMATOLOGICAL DATA NATIONAL SUMMARY

This publication, issued monthly and annually, contains selected climatological data on a national basis. It began with the January 1950 issue, but prior to that, much of the data appeared in the MONTHLY WEATHER REVIEW, the U.S. METEOROLOGICAL YEARBOOK (last published for the period 1943-49), and THE REPORT OF THE CHIEF OF THE WEATHER BUREAU (last published for 1934).

The monthly issue presents narrative summaries of general weather conditions and special reports on tropical cyclones. Also included are tables of observed extremes of temperature and precipitation for each State (entitled Condensed Climatological Summary through December 1968) together with the locations at which they occurred (Exhibit 19); basic climatological data (in metric units) for selected stations (Exhibit 20); heating-degree days (monthly totals and seasonal and normal totals to date) for selected stations (Exhibit 21); cooling-degree days (monthly totals and seasonal and normal totals to date) for selected stations (Exhibit 22); storm summary (Exhibit 23); rawinsonde data for standard pressure surfaces (Exhibit 24); and solar radiation intensities and net radiation (Exhibit 25). Monthly and seasonal heating-degree day data (Exhibit 26) and monthly and seasonal cooling-degree day data (Exhibit 27) are presented in only the June and December issues respectively. Charts published in the monthly issue include normal daily average temperature (°F, 1930-70), temperature departure from 19-year mean (°F, 1930-70), total precipitation (inches), percentage of normal precipitation, tracks of centers of anticyclones at sea level, and tracks of centers of cyclones at sea level.

The annual issue presents narrative summaries of general weather conditions, tornadoes, and of tropical cyclones in the North Atlantic, Eastern North Pacific, Central North Pacific, and Western North Pacific Oceans. Included are charts of the tornado and tropical cyclone tracks, and related tables. Additional tables include those on basic climatological data for the year in metric units (Exhibit 28); maximum short duration precipitation (Exhibit 29); sunshine amount and percent of possible (Exhibit 30); and normals, means, and extremes (Exhibit 31). Additional charts depict departure from normal for annual temperatures (°F), total annual precipitation (inches), and percentage of normal annual precipitation.

The following listed narrative summaries, tabular summaries, and charts have been included in previous monthly and annual issues of this publication: Monthly Narrative Summaries - (1) General summary of river and flood conditions--January 1950 through December 1972, and (2) General summary of national flood events--January 1953 through December 1977; Annual Narrative Summaries - (1) General summary of river and flood conditions--1950 through 1972, (2) General summary of national flood events--1953 through 1977, and (3) General summary of flood losses--1950 through 1975; Monthly Tabular Data - (1) Flood stage data--January 1950 through December 1977, (2) Solar radiation totals--January 1950 through August 1972 (these data are considered questionable and should be used with caution) and July 1975 through December 1976, (3) Total ozone data--August 1959 through December 1972 (these data are published currently in "Ozone Data for the World" by The World Ozone Data Center, Atmospheric Environment Service, 4905 Dufferin Street, Downsview, Ontario, Canada M3H 5T4), (4) Pilot balloon data--January 1950 through December 1955, (5) Radiosonde data--January 1950 through December 1955, (6) Rawin data--January 1950 through April 1956, (7) Severe storms--January 1950 through December 1953, (8) Storm data and unusual phenomena--January 1954 through December 1958, and (9) Solar ultra-violet radiation data--December 1967 through February 1974; Annual Tabular

Data - (1) Solar radiation totals (1950 through 1971, which are considered questionable; 1975 through 1976), (2) Pilot balloon data (1950 through 1955), (3) Rawinsonde data (1950 through 1955), (4) Radiosonde data (1950 through 1955), (5) Excessive short duration rainfall (1950 through 1972), (6) Average temperature-departures from normal by state (1950 through 1955), (7) Average precipitation-percent of normal precipitation by state (1950 through 1955), (8) Total evaporation and wind movement (1950 through 1952), and (9) Rawinsonde data (1956 through 1959); Monthly Charts - (1) Average temperature (°F) at surface-January 1950 through March 1956, (2) Departure of precipitation from normal (inches)-January 1950 through July 1960, (3) Total snowfall (inches)-January 1950 through April 1972, (4) Percentage of normal (mean) monthly snowfall-January 1950 through April 1972, (5) Depth of snow on ground (inches)-January 1950 through April 1972, (6) Percentage of sky cover between sunrise and sunset-January 1950 through July 1960, (7) Percentage of normal (mean) sky cover between sunrise and sunset-January 1950 through July 1960, (8) Percentage of possible sunshine-January 1950 through June 1972, (9) Percentage of normal (mean) monthly sunshine-January 1950 through June 1972, (10) Average daily values of solar radiation, langleys-January 1950 through June 1972, (11) Percentage of mean daily solar radiation-January 1950 through June 1972, (12) Average sea level pressure (mb) and surface windroses, and departure of average pressure (mb) from normal-January 1950 through December 1963, (13) Average sea level pressure (mb) and resultant wind, and departure of average pressure (mb) from normal-January 1964 through June 1972, (14) 850-, 700-, 500- and 300-millibar, (1200 GMT) charts of average height and temperature, and resultant winds-January 1950 through June 1972 (these charts were 0300 GMT through May 1957), (15) 200- and 100-millibar (1200 GMT) charts of average height and temperature, and resultant winds-June 1956 through June 1972 (0300 GMT through May 1957), and (16) 50- and 30-millibar (1200 GMT) charts of resultant winds-January 1961 through June 1972. The data on the charts identified in items 10 and 11 above are considered questionable.

EXHIBIT 19

OBSERVED EXTREMES OF TEMPERATURE AND PRECIPITATION -- BY STATES

DECEMBER 1978

STATE	Temperature						Precipitation			
	Monthly extremes						Monthly extremes			
	Station	Highest	Date	Station	Lowest	Date	Station	Greatest	Station	Least
		°F			°F			In.		In.
Alabama	2 Stations	84	8+	Hamilton 3 S	11	10	Scottsboro	9.02	Clayton	1.61
Alaska	Palmer IAS	50	9	Allakaket	-57	22+	Little Port Walter	29.14	Lonely	T
Arizona	2 Stations	79	14+	Fort Valley	-30	8	Palisade Ranger Station	11.74	Wupatki Natl Monument	.44
Arkansas	Crossett 2 SSE	81	8	3 Stations	8	11+	Beedeville	11.99	Siloam Springs	1.17
California	4 Stations	80	13+	2 Stations	-22	31+	White Mountain 2	13.60	2 Stations	.00
Colorado	Holly	69	20	Maybell	-50	8	Wolf Creek Pass 1 E	14.82	Doherty Ranch	.13
Connecticut	Danbury	68	4	Falls Village	- 2	29	Groton	6.05	Falls Village	3.14
Delaware	2 Stations	74	8	Wilmington WSO AP	13	29	Wilmgton Porter Reservoir	5.69	Bridgeville 1 NW	4.11
Florida	Tamiami Trl 40 Mi Bend	95	8	Smith Creek	20	18	Fort Pierce	7.25	Key West WSO AP	.43
Georgia	Folkston 9 SW	86	8	Blairsville Exp. Station	11	15	Ellijay	8.93	Brunswick FAA AP	.65
Hawaii	Puukohola Heiau 98.1	90	18+	Mauna Kea Obs 111.2	18	20	Pauoa Flats 78.4	17.76	Waikolu 540, Molokai	.00
Idaho	2 Stations	65	4	Stanley	-49	30+	Powell	6.13	Bruneau	.25
Illinois	Waterloo	68	21	Morrison	-17	10	Cairo WSO CI	11.31	Stockton 1 N	1.27
Indiana	Saint Meinrad	65	20	Ogden Dunes	- 8	10	English	7.62	Noblesville	1.89
Iowa	Creston	52	18	Sioux City WSO AP	-19	8	Clinton 1	3.87	Shenandoah 1 NE	.08
Kansas	2 Stations	75	20+	Saint Francis	-15	8	Le Roy	1.94	Geneseo	T
Kentucky	Baxter	72	9	Covington WSO AP	8	10	Jamestown	17.64	Warsaw Markland Dam	5.87
Louisiana	New Roads 5 ESE	85	8	Plain Dealing	14	11+	Monroe NLU	10.29	Denham Springs	1.44
Maine	Portland WSO AP	53	6	Van Buren 2	-23	12	Sanford 2 NNW	5.09	Bangor FAA AP	1.74
Maryland	4 Stations	74	9+	Oakland 1 SE	3	28	Mc Henry 2 NW	8.42	Crisfield Somers Cove	2.81
Massachusetts	Hingham	63	4	Chester 2	- 6	30	Ashfield	5.27	Great Barrington AP	2.89
Michigan	2 Stations	55	4+	2 Stations	-20	7	Whitefish Point	D 6.68	Nottawa 3 SE	.80
Minnesota	4 Stations	43	16+	3 Stations	-38	31	Cokato	D 1.70	Fergus Falls	.20
Mississippi	5 Stations	84	8+	3 Stations	12	28+	Batesville 2 SW	12.71	Tylertown 2 WNW	3.10
Missouri	Grovespring	76	20	Kirksville Radio KIRX	- 5	10	Caruthersville	12.05	Trenton	.27
Montana	3 Stations	50	11+	Elk Park	-51	29	Lindbergh Lake	5.74	Trident	.08
Nebraska	Benkelman	57	1	Agate 3 E	-31	8	Halsey 2 W	1.83	3 Stations	.05
Nevada	Searchlight	66	16	Mountain City Ranger Stn.	-27	30	Mount Rose Bowl	2.44	Leonard Creek Ranch	.04
New Hampshire	2 Stations	54	5	Mount Washington	-22	19	Mount Washington	6.82	Monroe 5 NNE	1.98
New Jersey	Chatsworth	74	8	Sussex 1 SE	3	30+	Moorestown	6.42	Atlantic City WSO AP	3.52

CLIMATOLOGICAL DATA

METRIC UNITS

JUNE 1978

State and Station	Elevation (ground)	Pressure: Station Ø	Pressure: Sea level	Temperature: Average maximum	Temperature: Average minimum	Temperature: Average	Temperature: Departure from normal	Temperature: Highest	Temperature: Date	Temperature: Lowest	Temperature: Date	No. of days: Max. 32.2 °C or above	No. of days: Min. 0 °C or lower	Average dew point	Average relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	No. of days: .25 mm. or more	No. of days: With thunderstorms	Snow, Ice pellets: Total	Snow, Ice pellets: Maximum depth on ground	Wind: Resultant speed	Wind: Resultant direction	Fastest mile (1.6 kilometers): Speed	Fastest mile (1.6 kilometers): Direction	Fastest mile (1.6 kilometers): Date	No. of days (sunrise to sunset): Clear, 0-3	No. of days (sunrise to sunset): Partly cloudy, 4-7	No. of days (sunrise to sunset): Cloudy, 8-10	Sky cover, tenths (sunrise to sunset)	Possible sunshine
	m	mb	mb	°C	°C	°C	°C	°C		°C				°C	%	mm	mm	mm			mm	mm	m/s		m/s							%
ALABAMA																																
BIRMINGHAM	189	994.3	1017.4	30.6	19.5	25.1	-0.2	37.2	29	13.3	14	9	0	19.4	72	128	26	75	8	5	0	0	0.7	7	9.4	S	6	7	17	6	5.6	68
HUNTSVILLE	190	994.9	1017.5	30.7	19.6	25.2	0.2	36.7	28	13.9	15	8	0	18.9	71	98	-3	70	6	5	0	0	0.1	11	10.7	33	23	9	11	10	5.7	
MOBILE	64	1009.1	1017.0	32.0	22.7	27.3	0.5	36.1	24+	19.4	14	11	0	21.7	76	156	1	49	14	17	0	0	0.4	10	8.9	13	30	4	18	8	5.9	
MONTGOMERY	59	1009.8	1017.0	32.2	21.2	26.7	0.6	37.2	29	15.0	14	14	0	19.4	68	98	-4	39	10	9	0	0	0.1	23	10.3	SW	7	10	16	4	4.8	79
ALASKA																																
ANCHORAGE	35	1010.8	1015.8	16.1	8.9	12.5	-0.1	21.1	11+	5.0	20	8																				
ANNETTE	34			18.5	9.0	14.2	1.7	25.0	22+	6.7	9	2	0	5.6	64	78	51	31	15	0	0	0	1.8	19	10.3	14	22	2	7	21	8.3	51
BARROW	9	1013.5	1014.1	3.0	-1.9	0.6	0.0	9.4	30	-5.0	2	6	0			24	-104	10	11		0	0			8.0	33	21+					
BARTER ISLAND	12	1012.2	1014.3	2.7	-1.6	0.6	-0.6	10.6	29	-5.0	25+	0	27	-2.8	79	9	1	4	6	0	T	T	2.9	7	13.4	8	22	0	3	27	9.2	
BETHEL	38	1007.8	1013.5	10.4	4.2	7.3	-3.6	18.3	20	1.1	7	0	0	5.0	86	71	39	17	18	0	0	0	4.6	21	19.2	19	22	0	1	29	9.5	
BETTLES	196	987.5	1011.5	16.7	7.0	11.8	-1.6	23.9	14	3.3	24+	2	0	6.7	71	62	31	12	15	0	0	0	1.4	22								
BIG DELTA	386			18.1	8.7	13.4	-0.6	22.8	9	3.3	8	7	0			40	-16	15	12		0	0										
COLD BAY	29	1011.5	1015.5	10.8	5.8	8.3	0.9	14.4	30	2.8	7+	0	0	5.6	84	72	25	11	22	0	0	0	3.4	16	20.6	16	21+	0	2	28	9.5	
FAIRBANKS	133	995.3	1012.2	17.6	7.6	12.6	-2.4	23.3	9	3.9	8	5	0	5.6	64	43	7	9	16	1	0	0	2.0	24	12.5	27	15	2	5	23	8.3	
GULKANA	479			16.1	4.4	10.3	-2.1	23.3	10	-2.8	21	4	1			30	-4	7	14		0	0										
HOMER	19	1013.5	1016.0	13.2	5.7	9.4		15.6	22+	0.0	3	0	1	6.1	77	63	36	31	12	0	0	0	2.6	25	10.7	20	14	3	13	14	7.1	
JUNEAU	4	1017.3	1017.9	16.9	7.7	12.3	0.6	23.9	7+	3.3	29	7	0	6.1	68	81	6	18	17	0	0	0	0.4	9	8.9	12	30	5	6	19	7.6	65
KING SALMON	15	1012.9	1014.8	13.6	5.8	9.7	-0.7	18.9	21+	2.8	16+	0	0	4.4	73	71	35	21	21	0	0	0	3.3	20	18.3	16	14	0	7	23	8.8	
KODIAK	4	1012.5	1016.8	14.4	5.8	10.1	0.3	21.1	22	2.2	3	1	0	6.7	79	18	-87	4	11	0	0	0	0.6	24	9.4	30	23	6	5	19	7.2	
KOTZEBUE	3	1010.2	1010.6	11.2	5.2	8.2	1.8	21.1	14	-1.7	2	1	3	5.0	81	21	8	14	10	0	0	0	1.4	18	13.9	15	15	2	7	21	8.0	
MC GRATH	105	1000.7	1013.5	15.7	5.9	10.8	-2.3	22.2	11+	-0.6	7	3	1	4.4	69	75	32	17	21	0	0	0	2.0	21	9.4	18	22	0	4	26	8.9	
NOME	4	1008.8	1009.8	9.4	4.6	7.1	-0.4	16.1	9	0.6	27	0	0	3.9	81	105	81	27	17	0	0	0	2.1	18	11.2	15	15	2	1	27	9.1	21
ST. PAUL ISLAND	7			8.5	5.1	6.8	1.8	11.1	26	-0.6	14+	0	2			34	2	6	14	0	0	0			14.3	18	21	0	1	29	9.7	
TALKEETNA	109			15.4	7.2	11.3	-1.4	22.8	11	1.7	20	2	0			120	65	20	20	0	0	0			8.0	21	23					
UNALAKLEET	9			13.0	5.1	9.1		18.9	10	0.6	12	0	0			74		20	19		0	0			13.0	11	14	0	1	29	9.5	
VALDEZ	11	1016.3	1017.2	13.8	6.7	10.3	-0.4	20.0	21	4.4	17	0	0	7.2	83	83	15	21	19	0	0	0	1.8	25	7.6	25	15+	3	4	23	8.6	
YAKUTAT	9	1017.3	1018.3	12.4	7.5	10.0	0.2	15.6	12	3.3	29	0	0	8.3	90	210	66	51	21	0	0	0	0.8	23	8.0	12	25+	1	6	23	8.7	
ARIZONA																																
FLAGSTAFF	2135			27.2	5.5	16.3	1.8	31.7	23	-0.6	6+	0	4			2	-12	2	1	1	0	0			14.3	SW	14+	22	6	2	2.1	92
PHOENIX	338	970.9	1008.4	41.9	23.5	32.7	3.5	46.1	23	17.8	4	30	0	2.2	16	T	-3	T	1	2	0	0	0.8	23	32.6Y	NE	5	26	3	1	1.3	97
TUCSON	788	924.1	1009.3	38.8	20.0	29.9	2.1	42.2	24	15.0	5	30	0	3.9	20	6	1	5	2	3	0	0	1.3	25	14.8	SE	27	24	4	2	1.6	97
WINSLOW	1492	852.4	1012.2	34.6	12.4	23.5	1.4	37.8	24+	7.8	6+	26	0	-2.2	20	7	0	6	2	2	0	0	3.2	22	14.3	22	10	22	7	1	2.5	
YUMA	59	1001.7	1008.7	41.7	23.7	32.7	2.8	45.6	23+	17.2	3	30	0	4.4	19	0	0	0	0	0	0	0	2.1	25	9.4	W	21	28	2	0	.9	100
ARKANSAS																																
FORT SMITH	136	999.7	1016.0	30.6	19.1	24.8	-0.7	35.0	29+	10.6	9	12	0	18.9	72	77	-22	23	10	10	0	0	0.8	12	13.4	N	20	12	8	10	5.1	72
LITTLE ROCK	78	1007.1	1016.6	31.3	20.8	26.1	0.4	36.1	26	14.4	10	13	0	20.6	74	137	48	25	10	10	0	0	0.7	16								
NO. LITTLE ROCK	169			30.6	20.2	25.4	0.0	35.6	26	13.9	9	12	0			107	25	30	10	11	0	0			9.4	S	20					86
CALIFORNIA																																
BAKERSFIELD	145	996.6	1013.9	34.3	18.9	26.6	1.7	41.7	7+	15.6	16	22	0	9.4	36	0	-2	0	0	0	0	0	2.1	33	8.9	31	26	25	4	1	1.3	
BISHOP	1252	873.0		32.2	10.3	21.3	0.3	37.2	8	6.7	28	16	0			1	-2	1	1		0	0			17.9Y		24	23	5	2	2.1	
BLUE CANYON	1609	839.1	1012.8	19.8	9.4	14.6	-0.4	27.2	8+	4.4	16	0	0	0.0	40	12	-13	10	4		0	0	1.3	18	7.2	19	24+					
EUREKA U	13			16.0	10.6	13.3	0.4	18.9	12	7.8	1	0	0			9	-8	4	6	1	0	0			10.7	NW	26	5	6	19	7.5	61
FRESNO	100	1002.4	1014.1	33.6	15.6	24.6	1.3	40.6	7+	12.8	25+	19	0	8.9	40	0	-2	0	0	0	0	0	3.1	30	8.9	32	18	24	5	1	1.4	99
LONG BEACH	9	1012.9	1014.3	26.6	15.5	21.1	1.4	33.9	23	11.7	3	1	0	13.9	71	0	-1	0	0	0	0	0	1.5	22	7.2	28	24	17	13	0	3.0	
LOS ANGELES	30	1010.8	1014.4	23.9	15.6	19.8	1.7	32.2	23	14.4	15+	1	0	15.0	78	0	-1	0	0	0	0	0	2.6	24	13.0Y	SW	24	14	11	5	3.9	
LOS ANGELES U	82			27.6	16.6	22.1	2.1	33.3	23+	13.9	3	3	0			0	-1	0	0		0	0										
MT SHASTA R	1077	893.3	1016.5	24.2	5.9	15.1	-0.5	31.7	8+	0.0	11	0	1	3.3	48	24	-3	11	5		0	0	0.6	36	6.3	1	26+					
OAKLAND	2	1016.9	1017.3	20.8	13.6	17.2	0.6	26.1	6	12.2	16	0	0	11.7	76	7	-4	T	0	0	0	0	4.0	27	9.8	26	25+	14	14	2	3.7	
RED BLUFF	104	1001.4	1013.7	32.6	16.9	24.8	0.6	40.6	6	12.8	1	14	0	7.8	38	1	-11	1	2	2	0	0	0.5	17	9.8	5	23	19	8	3	2.6	94
SACRAMENTO	9	1013.5	1014.5	29.8	12.4	21.1	-0.3	39.4	6	10.0	14	5	0	10.6	57	7	-3	T	0	0	0	0	2.9	21	9.8	SW	9	24	4	2	1.6	90
SANDBERG R	1377	863.5	1014.8	25.2	12.3	18.7	0.9	32.8	8	6.7	27	1	0	3.3	41	0	-1	0	0		0	0	3.2	33	15.6	34	11					
SAN DIEGO	4	1013.2	1014.4	25.2	18.4	21.8	3.2	32.2	23	17.2	11	1	0	15.0	68	T	-1	T	0	0	0	0	2.4	29	9.8	W	23	14	12	4	4.4	78
SAN FRANCISCO	2	1016.6	1017.2	20.2	11.3	15.8	-0.7	25.6	6	9.4	15	0	0	10.0	75	T	-3	T	0	0	0	0	5.7	29	14.3	29	9	14	14	2	3.3	
SAN FRANCISCO U	16			18.1	11.7	14.9	0.1	22.2	16	10.0	6	0	0			0	-4	0	0													

EXHIBIT 20

EXHIBIT 21

HEATING DEGREE DAYS

(Base 65°F.)

DECEMBER 1977

State and Station	Current season: This month	Current season: Period July through this month	Normals: July through this month
ALABAMA			
BIRMINGHAM	640	1108	1148
HUNTSVILLE	721	1308	1312
MOBILE	439	661	635
MONTGOMERY	479	730	911
IDAHO			
BOISE	853	2158	2321
LEWISTON	868	2250	2221
POCATELLO	990	2496	2787
ILLINOIS			
NEBRASKA			
GRAND ISLAND	1185	2381	2457
LINCOLN	1230	2478	2361
NORFOLK	1318	2673	2663
NORTH PLATTE	1236	2695	2643
OMAHA	1196	2340	2275
TENNESSEE			
BRISTOL	913	1746	1711
CHATTANOOGA	753	1350	1412
KNOXVILLE	764	1383	1388
MEMPHIS	640	1076	1263
NASHVILLE	813	1496	1451

EXHIBIT 22

COOLING DEGREE DAYS

(Base 65°F.)

JUNE 1978

State and station	Current season: This month	Current season: Period January through this month	Normals January through this month
ALABAMA			
BIRMINGHAM	370	585	669
HUNTSVILLE	374	553	604
MOBILE	496	969	989
MONTGOMERY	458	782	801
ALASKA			
ANCHORAGE	0	0	0
ANNETTE	1	1	6
BARROW	0	0	0
BARTER ISLAND	0	0	0
HAWAII			
HILO	351	1681	1321
HONOLULU	418	2062	1758
KAHULUI	430	2026	1567
LIHUE	362	1672	1533
IDAHO			
BOISE	64	71	108
LEWISTON	112	112	102
POCATELLO	28	28	49
NEBRASKA			
GRAND ISLAND	293	350	265
LINCOLN	230	288	313
NORFOLK	244	304	232
NORTH PLATTE	174	196	191
OMAHA	287	366	332
OMAHA (NORTH)	252	317	254
SCOTTSBLUFF	180	214	134
VALENTINE	163	190	152
NEVADA			
SOUTH CAROLINA			
CHARLESTON	414	775	730
CHARLESTON U	468	858	833
COLUMBIA	369	598	733
GRNVLLE-SPRTNBRG	319	451	520
SOUTH DAKOTA			
ABERDEEN	100	121	120
HURON	119	140	160
RAPID CITY	99	108	125
SIOUX FALLS	133	165	175

EXHIBIT 23

STORM SUMMARY

JUNE 1978

STATE	TORNADOES: NUMBER	TORNADOES: DAYS	TORNADOES: DEATHS	TORNADOES: INJURIES	TORNADOES: †DAMAGE	HAILSTORMS: DEATHS	HAILSTORMS: INJURIES	HAILSTORMS †DAMAGE: PROPERTY	HAILSTORMS †DAMAGE: CROPS	WINDSTORMS: DEATHS	WINDSTORMS: INJURIES	WINDSTORMS †DAMAGE: PROPERTY	WINDSTORMS †DAMAGE: CROPS	LIGHTNING: DEATHS	LIGHTNING: INJURIES	LIGHTNING †DAMAGE: PROPERTY	LIGHTNING †DAMAGE: CROPS	@HEAVY SNOWSTORMS AND BLIZZARDS: DEATHS	@HEAVY SNOWSTORMS AND BLIZZARDS: INJURIES	@HEAVY SNOWSTORMS AND BLIZZARDS †DAMAGE: PROPERTY	@HEAVY SNOWSTORMS AND BLIZZARDS †DAMAGE: CROPS	# ICE STORMS: DEATHS	# ICE STORMS: INJURIES	# ICE STORMS †DAMAGE: PROPERTY	# ICE STORMS †DAMAGE: CROPS	ϕ ALL OTHER: DEATHS	ϕ ALL OTHER: INJURIES	ϕ ALL OTHER †DAMAGE: PROPERTY	ϕ ALL OTHER †DAMAGE: CROPS
Alabama	3	3			4						1	5		1		4											4	
Alaska																									3		4	
Arizona											3	5	4	1														
Arkansas	6	5			4			3				5		2	1	2												
California *																												

EXHIBIT 24

RAWINSONDE DATA

Average monthly values

JUNE 1978

Standard pressure surface mb.	CARIBOU, ME 989 MB: No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind: Direction tens of deg.	Resultant Wind: Speed m.p.s.	CENTREVILLE, AL 1001 MB: No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind: Direction tens of deg.	Resultant Wind: Speed m.p.s.	CHARLESTON, SC 1017 MB: No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind: Direction tens of deg.	Resultant Wind: Speed m.p.s.	CHATHAM, MA 1014 MB: No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind: Direction tens of deg.	Resultant Wind: Speed m.p.s.	CHIHUAHUA, MEXICO 859 MB: No. of observations	Dynamic height meters	Temperature °C	Dew Point °C †	Resultant Wind: Direction tens of deg.	Resultant Wind: Speed m.p.s.
SFC	30	191	12.1	9.6	23	1.3	30	140	20.7	19.6	04	1.1	30	13	21.9	20.4	30	.3	30	16	15.3	12.3	25	2.3	30	1,428	19.7	8.6	17	.4
1000							20	166	21.4	19.3	03	1.5	30	159	23.2	20.7	18	.4	30	137	15.5	11.3	25	3.7						
950	30	531	12.2	7.0	25	4.4	30	600	22.4	16.9	20	.7	30	607	21.5	16.8	23	1.4	30	573	16.0	7.2	27	5.9						
900	30	984	11.0	5.3	26	6.0	30	1,070	19.6	13.3	23	1.7	30	1,075	19.1	12.8	27	1.8	30	1,031	13.8	4.6	27	6.2						
850	30	1,459	8.5	3.3	27	7.3	30	1,560	16.4	9.7	24	2.2	30	1,566	15.8	10.4	29	1.7	30	1,511	11.4	.7	27	7.3	30	1,515	21.8	6.5	18	.6
800	30	1,959	5.8	.6	27	8.1	30	2,074	13.4	5.1	24	2.3	30	2,078	12.8	5.6	29	2.0	30	2,016	8.9	-2.2	27	8.9	30	2,040	20.1	5.4	18	1.7
750	30	2,485	3.0	-3.6	27	8.6	30	2,613	10.5	-1.0	27	1.9	30	2,617	9.9	.6	29	2.6	30	2,548	6.5	-7.2	27	10.2	30	2,593	16.4	2.7	13	.9
700	30	3,041	.5	-8.5	27	9.2	30	3,186	7.2	-5.8	29	1.7	30	3,188	6.5	-3.0	29	3.5	30	3,111	3.5	-11.1	27	10.6	30	3,176	12.2	-.6	07	1.8
650	30	3,633	-2.6	-11.8	27	10.6	30	3,792	3.6	-8.9	31	2.0	30	3,793	3.3	-8.0	29	4.3	30	3,709	.1	-14.2	27	11.8	30	3,793	7.5	-4.0	05	3.2
600	30	4,264	-6.1	-16.6	27	10.9	30	4,438	-.4	-14.5	31	1.9	30	4,438	-.2	-13.3	28	4.7	30	4,346	-3.7	-20.0	27	12.7	30	4,446	2.1	-5.8	06	3.8
550	30	4,940	-10.3	-22.5	27	11.8	30	5,128	-4.6	-19.4	30	2.6	30	5,129	-4.1	-18.6	28	5.6	30	5,028	-7.7	-24.1	27	13.3	30	5,141	-3.4	-10.6	05	3.2

EXHIBIT 25

SOLAR RADIATION INTENSITIES

Tabulated in langleys per minute on a surface normal to the direction of the sun. JUNE 1978

Date	Sun's zenith distance								
	A.M.				*	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
MADISON, WI									
	Air mass								
	4.69	3.75	2.81	1.88	*	1.88	2.81	3.75	4.69
1-----	----	----	S .62	----	----	----	----	----	----
4-----	----	----	M .55	S .68	----	----	----	----	----
5-----	----	----	----	S .73	S .87	S .70	S .58	S .48	S .36
8-----	S .55	S .62	S .70	S .81	S .96	S .81	S .69	S .60	S .53
9-----	S .52	S .59	S .66	S .78	S .93	S .72	S .63	S .55	S .46
10----	----	----	----	----	S .92	S .73	----	----	----
12----	----	----	S .67	S .78	----	----	S .68	S .61	S .53
13----	S .55	S .63	S .71	S .77	----	----	----	----	----
19----	S .51	S .61	S .70	S .78	----	----	----	----	----
21----	S .55	S .63	S .70	S .81	S .89	----	----	----	----
22----	M .44	M .52	M .60	M .68	----	----	----	----	----
Averages	.52	.60	.65	.76	.91	.74	.65	.56	.47

Date	Sun's zenith distance								
	A.M.				*	P.M.			
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°
TUCSON, AZ									
	Air mass								
	4.64	3.71	2.78	1.86	*	1.86	2.78	3.71	4.64
1-----	.85	.97	1.09	1.25	1.48	1.23	1.05	.89	.80
2-----	.67	.79	.93	1.14	1.39	1.28	1.11	.98	.89
3-----	.88	.99	1.11	1.28	1.46	1.21	1.07	.92	.80
4-----	.84	.94	1.09	1.25	1.40	1.25	1.08	.93	.84
5-----	.79	.89	1.04	1.21	1.39	1.21	1.05	.91	.79
6-----	.66	.78	.90	1.12	1.41	1.16	.94	.80	.69
7-----	.74	.86	.99	1.16	1.38	1.16	.97	.84	.74
8-----	.68	.80	.94	1.13	1.33	1.08	.90	.76	.63
9-----	.57	.70	.87	1.08	1.32	1.04	.86	.70	.60
10----	.57	.68	.84	1.06	1.33	1.13	.96	.83	.74
11----	.78	.89	1.02	1.20	1.42	1.20	1.05	.92	.83
12----	.81	.91	1.04	1.20	1.41	1.18	.99	.85	.72
13----	.59	.68	.85	1.06	1.29	1.13	.93	.80	.70
14----	.71	.83	.94	1.11	1.35	1.13	.94	.84	.76
15----	.68	.81	.94	1.12	1.34	1.13	.99	.85	.76
16----	.79	.88	1.01	1.17	1.39	1.14	.98	.84	.72
17----	.80	.89	1.03	1.19	1.39	1.16	1.03	.88	.81
18----	.83	.94	1.06	1.22	1.41	----	----	.86	.79
19----	.82	.91	1.04	1.18	1.36	1.18	.99	.88	.77
20----	.90	1.00	1.11	1.25	1.40	1.20	1.06	.96	.85
21----	.83	.93	1.03	1.20	----	----	----	.87	.77
22----	.70	.77	.91	1.08	----	----	----	----	----
23----	.69	.79	.93	1.10	----	1.08	.89	.76	.65
24----	.49	.61	.77	.97	----	1.04	.87	.75	.63
25----	.69	.79	.90	1.11	1.35	1.19	1.05	.94	.84
26----	.66	.77	.90	1.07	1.31	1.06	.92	.82	.74
27----	----	.67	.79	.94	----	----	----	----	----
28----	----	----	----	.97	----	----	----	----	----
29----	.59	.69	.82	1.01	1.29	----	----	----	.71
30----	.74	.84	.96	1.12	1.38	1.21	1.03	.91	.81
Averages	.73	.83	.96	1.13	1.37	1.16	.99	.86	.75

NET RADIATION

Net radiation in langleys per day (8 a.m. to 8 a.m.) at Palmer, Alaska.

Date.	1	2	3	4	5	8	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Avg.
Langleys. . .	112	179	207	236	209	104	202	202	201	215	291	277	208	149	48	202	84	87	112	95	275	148	118	87	190	2	161	101	297	192		166

EXHIBIT 26

MONTHLY AND SEASONAL HEATING DEGREE DAYS

(Base 65°F) 1977-1978

State and Station	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total for Season	Normals July-June
ALABAMA														
BIRMINGHAM	0	0	0	176	292	640	967	766	452	120	42	0	3457	2844
HUNTSVILLE	0	0	4	216	367	721	1062	855	514	129	60	0	3928	3302
MOBILE	0	0	0	73	149	439	731	551	268	16	0	0	2227	1684
MONTGOMERY	0	0	0	87	164	479	756	601	326	50	2	0	2465	2269

EXHIBIT 27

MONTHLY AND SEASONAL COOLING DEGREE DAYS

(Base 85°F) 1977

State and Station	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total for Season	Normals Jan.- Dec.
ALABAMA														
BIRMINGHAM	0	5	21	85	241	450	578	537	329	25	0	1	2272	1928
HUNTSVILLE	0	1	8	70	222	372	557	477	271	13	4	0	1995	1808
MOBILE	0	4	74	132	333	543	579	576	482	85	31	7	2846	2577
MONTGOMERY	0	0	27	113	308	533	585	523	442	63	29	7	2630	2238
ALASKA														
ANCHORAGE	0	0	0	0	0	0	8	3	0	0	0	0	11	0
ANNETTE	0	0	0	0	0	0	0	60	0	0	0	0	60	14
BARROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BARTER ISLAND	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BETHEL	0	0	0	0	0	0	0	8	0	0	0	0	8	0
BETTLES	0	0	0	0	0	0	34	36	0	0	0	0	90	17
BIG DELTA	0	0	0	0	0	0	26	39	0	0	0	0	65	34
COLD BAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FAIRBANKS	0	0	0	0	0	0	44	54	0	0	0	0	98	52
GULKANA	0	0	0	0	0	0	4	1	0	0	0	0	5	9
HOMER	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ANNUAL CLIMATOLOGICAL DATA
METRIC UNITS

YEAR 1977

State and Station	Temperature: Averages: Daily maximum	Temperature: Averages: Daily minimum	Temperature: Averages: Annual	Temperature: Extremes: Highest	Temperature: Extremes: Date	Temperature: Extremes: Lowest	Temperature: Extremes: Date	Heating degree days	Cooling degree days	Precipitation: Total	Precipitation: Greatest in 24 hours	Precipitation: Date (s)	Snow †: Total	Snow †: Greatest in 24 hours	Snow †: Date (s)	Relative humidity: 1:00 a.m. E.S.T.	Relative humidity: 7:00 a.m. E.S.T.	Relative humidity: 1:00 p.m. E.S.T.	Relative humidity: 7:00 p.m. E.S.T.	Wind: Average speed	Wind: Resultant speed	Wind: Resultant direction	Wind: Fastest mile (1.6 kilometers): Speed	Wind: Fastest mile: Direction	Wind: Fastest mile: Date	Average sky cover sunrise to sunset	Number of days: Sunrise to sunset: Clear, 0-0.3	Number of days: Sunrise to sunset: Partly cloudy, 0.4-0.7	Number of days: Sunrise to sunset: Cloudy, 0.8-1.0	Number of days: Precipitation 2.5mm. or more	Number of days: Snow † 25.4mm. or more	Number of days: Thunderstorms	Number of days: Heavy fog	Number of days: Max. temp. 32.2° C and above	Number of days: Max. temp. 0° C and below	Number of days: Min. temp. 0° C and below	Number of days: Min. temp. −17.8° C and below
MICHIGAN	°C	°C	°C	°C		°C		Base 18.3° C	Base 18.3° C	mm	mm		mm	mm		%	%	%	%	m/s	m/s		m/s			Tenths										
ALPENA	11.7	.3	6.0	36.7	JUL 20	-28.3	JAN 9	4566	143	730	42	SEP 24	2088	274	OEC 8-9	82	83	62	69	4.2	0.9	25	13.0	NW	APR 7+	6.8	69	113	181	154	27	25	26	3	78	168	23
DETROIT	14.9	6.4	10.7	37.8	JUL 15	-21.1	JAN 28	3302	585							67	69	56	57	5.0	1.7	24	16.5	26	SEP 26+						33	7	17	58	104	4
DETROIT METRO	14.9	3.8	9.4	38.9	JUL 15	-23.3	JAN 17	3674	485	835	39	JUL 18-19	1440	211	MAR 17-18	77	80	58	63	4.5	1.6	25	25.0	W	JUL 19	6.6	72	104	189	152	17	36	16	25	64	122	18
FLINT	13.6	3.6	8.6	37.2	JUL 15	-24.4	JAN 16	3853	364	733	40	OCT 30-1	968	132	JAN 9-10	77	79	61	64	4.7	1.7	24	16.5	30	JUL 4	7.0	61	106	198	147	11	30	18	9	72	129	16
GRAND RAPIDS	14.4	3.4	8.9	34.4	JUL 15	-25.6	JAN 9	3761	397	960	52	JUL 3-4	1941	152	JAN 28	82	84	63	69	4.6	1.6	23	18.3	SW	OCT 11	7.1	67	93	205	161	21	34	34	19	69	137	15
HOUGHTON LAKE	11.9	.8	6.4	35.6	JUL 19	-28.3	JAN 9	4490	197	684	38	AUG 4-5	1633	157	NOV 25	83	85	64	68	3.8	1.1	26	13.9	22	MAR 29	6.9	64	108	193	169	21	36	35	7	83	163	30
LANSING	14.3	3.0	8.7	37.2	JUL 15	-27.2	JAN 9	3855	399	626	34	SEP 12-13	1318	183	JAN 9-10	86	89	67	71	4.5	1.7	24	26.4	SW	APR 2	7.1	63	103	199	156	13	33	23	18	74	134	21
MARQUETTE U	10.7	2.1	6.2	40.0	JUL 19	-24.4	JAN 9	4502	127	915	68	SEP 18-19	2918	262	MAR 3-4								16.1	SW	NOV 21					172	34			3	89	145	20
MUSKEGON	12.9	3.8	8.4	33.3	JUL 14	-22.2	JAN 9	3840	289	816	33	OCT 30-1	3985	302	JAN 27-28	79	82	66	69	5.5	1.3	24	15.6	24	OCT 11	7.0	72	89	204	164	42	45	25	1	74	136	7
SAULT STE MARIE	9.2	-1.1	4.1	32.8	JUL 20	-34.4	JAN 9	5191	48	988	42	JUL 5-6	4067	305	JAN 30-31	89	89	72	79	4.0	0.4	30	17.0	SE	SEP 24	7.2	62	90	213	193	48	23	36	1	98	166	35
MINNESOTA																																				
DULUTH	8.9	-.9	4.1	31.7	JUL 19	-37.2	JAN 9	5220	68	864	86	SEP 23-24	1499	221	MAR 3-4	76	79	62	62	4.7	0.4	32	20.1	SW	SEP 9	7.1	62	99	204	139	15	36	80	0	103	153	49
INTERNATIONAL FALLS	8.8	-2.9	2.9	34.4	JUL 19	-40.0	JAN 9	5660	104	808	54	SEP 8-9	1872	246	MAR 29-30	78	83	63	63	3.7	0.6	27	13.9	36	NOV 9	7.2	58	101	206	160	22	42	26	3	104	180	72
MINNEAPOLIS	12.6	2.1	7.3	37.8	JUL 19	-35.6	JAN 9	4331	384	886	187	AUG 30-31	1537	203	MAR 2-3	74	79	60	60	4.6	0.5	26	18.3	W	NOV 20	6.6	76	112	177	145	18	55	19	11	83	144	43
ROCHESTER	12.6	1.4	7.0	35.6	JUL 14	-34.4	JAN 9	4383	304	743	51	JUN 16	1290	185	DEC 31	77	79	63	66	5.7	1.4	24	19.2	29	JUN 28	6.7	65	118	182	127	17	48	34	10	85	142	48
ST CLOUD	11.9	-.2	5.9	36.7	JUL 19	-41.7	JAN 9	4729	238	904	75	AUG 26-27	1179	99	MAR 2-3		83	61	62							6.3	84	112	169	137	21			7	86	155	50

MAXIMUM SHORT DURATION PRECIPITATION

YEAR 1977

Maximum precipitation in inches (5 to 180 minutes)

	5	10	15	20	30	45	50	80	100	120	150	160
BIRMINGHAM, ALABAMA												
JAN	.12	.20	.22	.24	.27	.32	.38	.52	.57	.60	.70	.78
DATE	09	09	09	09	09	09	09	09	09	09	09	09
TIME	1025	1025	1025	1625	1025	1025	1025	1025	1025	1025	1240	1310
FEB	.28	.55	.59	.64	.70	.77	.82	.87	.96	1.10	1.27	1.34
DATE	23	23	23	23	23	23	23	23	23	23	23	23
TIME	2018	2023	2028	2032	2042	2037	2112	2132	2152	2212	2242	2301
MAR	.14	.23	.26	.30	.36	.58	.70	.80	.84	.87	.94	1.04
DATE	12	12	12	12	12	12	12	12	12	12	12	12
TIME	0920	0925	0930	0935	0945	1000	1015	1007	1007	1115	1145	1215
APR	.32	.52	.62	.70	.83	1.01	1.34	1.46	1.47	1.53	1.68	1.87
DATE	03	02	05	05	05	05	05	05	05	05	05	05
TIME	0003	2359	1317	1522	1532	1547	1602	1622	1642	1702	1732	1802
MAY	.40	.60	.70	.85	1.40	1.49	1.50	1.50	1.50	1.50	1.51	1.51
DATE	21	21	21	21	21	21	21	21	21	21	21	21
TIME	1525	1530	1535	1540	1550	1605	1620	1640	1700	1720	1750	1880
JUN	.15	.24	.26	.28	.32	.35	.35	.36	.36	.36	.36	.38
DATE	18	18	14	18	14	18	18	18	18	18	18	18
TIME	1315	1320	1325	1330	1340	1355	1410	1430	1450	1510	1540	1610
JUL	.35	.54	.75	.85	1.10	1.22	1.23	1.23	1.25	1.25	1.27	1.28
DATE	28	28	28	28	28	28	28	28	28	28	28	28
TIME	1428	1433	1438	1443	1453	1508	1523	1543	1603	1623	1653	1725
AUG	.09	.15	.18	.20	.33	.38	.42	.45	.48	.50	.51	.52
DATE	23	23	23	23	23	23	23	23	23	23	23	23
TIME	1735	1740	1745	1750	1746	1750	1805	1825	1845	1905	1935	2005

Maximum precipitation in inches (5 to 180 minutes)

	5	10	15	20	30	45	60	80	100	120	150	160
HUNTSVILLE, ALABAMA												
JAN	.04	.07	.10	.13	.16	.21	.32	.37	.41	.54	.60	.75
DATE	09	09	09	09	09	09	09	09	09	09	09	09
TIME	0850	0855	0900	0905	0915	0930	1215	1215	1023	1345	1115	1145
FEB	.19	.34	.47	.56	.66	.71	.74	.87	1.04	1.18	1.32	1.39
DATE	26	26	26	26	26	26	26	23	23	23	23	23
TIME	2131	2131	2132	2136	2143	2200	2215	2032	2103	2112	2142	2200
MAR	.17	.35	.46	.53	.60	.79	.79	.81	1.08	1.10	1.27	1.50
DATE	12	12	12	12	12	12	12	12	12	12	12	12
TIME	0450	0450	0500	0500	0500	0900	0800	0816	0854	0914	0944	1015
APR	.17	.25	.32	.36	.48	.50	.55	.69	.82	.84	1.00	1.16
DATE	07	02	02	02	02	02	21	02	02	02	02	02
TIME	2149	2152	2152	2152	2155	2215	2230	2215	2215	2205	2205	2205
MAY	.40	.75	.85	1.18	1.54	1.87	2.13	2.14	2.10	2.21	2.26	2.28
DATE	21	21	21	21	21	21	21	21	21	21	21	21
TIME	1828	1830	1831	1838	1845	1945	1902	1930	1950	2008	2040	2108
JUN	.25	.40	.54	.61	.65	.65	.67	.70	.74	.76	.80	.81
DATE	17	17	17	17	17	17	17	17	17	17	17	17
TIME	1553	1555	1603	1608	1616	1631	1646	1705	1726	1745	1817	1847
JUL	.30	.59	.68	1.02	1.13	1.15	1.16	1.16	1.16	1.16	1.16	1.16
DATE	17	17	17	17	17	17	17	17	17	17	17	17
TIME	1435	1438	1438	1433	1443	1447	1450	1505	1505	1505	1505	1505
AUG	.41	.54	.57	.57	.68	1.06	1.20	1.22	1.22	1.24	1.27	1.27
DATE	17	17	17	17	17	17	17	17	17	17	17	17
TIME	1123	1130	1135	1135	0448	0503	0518	0538	0558	0618	0650	0850

Maximum precipitation in inches (5 to 180 minutes)

	5	10	15	20	30	45	60	80	100	120	160	180
MOBILE, ALABAMA												
JAN	.40	.48	.49	.50	.60	.69	.70	.88	.99	1.05	1.18	1.22
DATE	14	14	14	14	14	14	14	14	14	14	14	14
TIME	0406	0409	0413	0415	0415	0425	0415	0415	0423	0445	0515	0515
FEB	.25	.44	.47	.49	.50	.51	.51	.53	.54	.54	.54	.56
DATE	27	27	27	27	27	27	27	27	27	27	27	27
TIME	0020	0029	0025	0030	0040	0050	0105	0130	0150	0200	0235	0305
MAR	.30	.50	.65	.70	.80	.86	.91	.95	.98	1.01	1.02	1.03
DATE	04	04	04	04	04	04	04	04	04	04	04	04
TIME	0338	0342	0347	0352	0404	0417	0432	0452	0513	0532	0602	0632
APR	.30	.58	.70	.78	.95	1.20	1.32	1.41	1.52	1.58	1.63	1.67
DATE	22	22	22	22	22	22	22	22	22	22	22	22
TIME	0615	0620	0635	0830	0840	0855	0710	0730	0750	0810	0840	0910
MAY	.25	.50	.62	.77	.96	1.02	1.08	1.10	1.14	1.16	1.23	1.37
DATE	02	02	02	02	02	02	02	02	02	02	02	02
TIME	0829	0829	0829	0829	0832	0843	0843	0843	0843	0906	1022	1052
JUN	.16	.30	.33	.38	.41	.42	.43	.44	.45	.45	.48	.63
DATE	01	01	01	01	01	01	01	01	01	01	01	01
TIME	1842	1845	1844	1846	1850	1900	1911	1910	1910	1911	1931	1935
JUL	.36	.87	1.06	1.27	1.40	1.45	1.45	1.45	1.45	1.45	1.45	1.45
DATE	12	12	12	12	12	12	12	12	12	12	12	12
TIME	1551	1556	1600	1601	1611	1610	1643	1702	1705	1705	1705	1705
AUG	.36	.57	.61	.66	.75	.77	.77	.77	.77	.77	.77	.87
DATE	22	22	22	22	22	22	22	22	22	22	22	04
TIME	1502	1507	1502	1502	1511	1525	1525	1525	1525	1525	1515	1428

SUNSHINE, AMOUNT AND PERCENT

YEAR 1977

Station	January Hours	January Percent of possible	February Hours	February Percent of possible	March Hours	March Percent of possible	April Hours	April Percent of possible	May Hours	May Percent of possible	June Hours	June Percent of possible	July Hours	July Percent of possible	August Hours	August Percent of possible	September Hours	September Percent of possible	October Hours	October Percent of possible	November Hours	November Percent of possible	December Hours	December Percent of possible	Annual Hours	Annual Percent of possible
ALABAMA																										
BIRMINGHAM	171	54	226	74	175	47	240	61	270	63	302	70	233	53	246	59	177	48	222	63	109	35	187	60	2555	57
MONTGOMERY	154	48	216	70	184	49	286	73	298	70	339	79	274	63	270	66	211	57	235	67	122	39	171	55	2759	62
ALASKA																										
ANCHORAGE	79	39	90	36	180	49	163	37	321	59	307	53	299	53	184	38	140	36	124	40	133	61	65	37	2083	46
JUNEAU	31	14	41	16	140	38	165	38	354	68	172	31	199	37	271	57	167	44	106	33	89	38	80	40	1816	40
NOME	42	25	64	27	230	63	299	66	185	32	347	55	371	61	256	50	147	38	122	41	100	52	39	30	2201	48
ARIZONA																										
FLAGSTAFF	210	67	262	86	314	85	332	85	353	81	305	70	264	60	245	59	283	76								
PHOENIX	260	82	289	94	346	93	361	49	395	92	300	91	347	79	355	86	306	82	307	87	273	87	195	65	3823	86
TUCSON	229	71	295	95	340	92	361	93	399	93	394	92	352	81	340	82	318	86	303	86	294	93	245	78	3870	87
YUMA	232	73	283	92	351	95	373	96	381	89	412	96	413	95	389	94	351	93	336	95	289	92	210	67	4020	90
ARKANSAS																										
FORT SMITH	179	57	225	74	264	71	259	66	277	64	312	72	288	65	252	60	200	54	187	54	108	35	153	50	2705	61
LITTLE ROCK	199	63	251	82	277	75	334	85	389	90	389	90	382	87	381	92	319	86	307	87	164	55				

NORMALS, MEANS AND EXTREMES

YEAR 1977

State and Station	Elevation Ground (Meters)	Temperature (°C) Normal (1941–1970) January Daily Maximum	January Daily Minimum	July Daily Maximum	July Daily Minimum	Annual	Extremes Length (Yrs)	Record Highest	Record Lowest	Normal Heating Degree Days (1941–1970) January	Seasonal
ALABAMA											
BIRMINGHAM	189	12.4	1.2	32.4	20.8	16.9	34	41.1	-20.0	363	1580
HUNTSVILLE	190	10.3	-0.4	32.3	20.4	16.0	10	38.3	-18.3	415	1834
MOBILE	64	16.2	5.2	32.5	22.6	19.7	36	40.0	-13.3	251	935
MONTGOMERY	59	14.4	2.8	32.5	21.9	18.2	33	40.6	-15.0	309	1260
ALASKA											
ANCHORAGE	35	-6.7	-15.8	18.7	10.1	1.7	24	29.4	-36.7	916	6061
ANNETTE	34	3.3	-1.7	17.8	10.9	7.6	30	32.2	-17.2	543	3918
BARROW X	9	-22.2	-29.6	6.8	0.6	-12.6	57	25.6	-48.9	1373	11257
BARTER ISLAND V	12	-22.5	-29.9	7.5	1.4	-12.2	28	25.6	-50.6	1381	11107
BETHEL	38	-10.9	-19.0	16.6	8.6	-1.8	19	30.0	-43.3	1032	7334
BETTLES	196	-20.7	-29.5	20.1	8.6	-5.9	27	33.3	-56.7	1347	8846
BIG DELTA	386	-16.4	-24.8	20.4	10.0	-2.5	36	33.3	-52.8	1204	7609
COLD BAY	29	0.3	-4.6	12.4	7.6	3.3	33	25.6	-25.0	634	5480
FAIRBANKS	133	-19.0	-29.8	22.1	9.8	-3.5	26	35.6	-52.2	1324	7969
GULKANA	479	-16.7	-26.9	20.1	7.6	-2.9	32	32.8	-53.9	1245	7743
HOMER	19	-2.2	-9.6	15.6	6.9	2.5	34	26.7	-29.4	751	5757
ILIAMNA 1969	57						27	32.8	-43.9		

State and Station	Precipitation (Millimeters) Normal (1941–1970) Wettest Month	Driest Month	Annual	Extremes Wettest Month	Driest Month	Maximum In 24 Hours	Snow @ Mean Total January	Seasonal	Extreme Maximum In 24 Hours
ALABAMA									
BIRMINGHAM	157	66	1352	449	T	179	13	30	213
HUNTSVILLE	147	65	1325	375	20	196	33	64	91
MOBILE	225	65	1701	490	1	339	5	13	91
MONTGOMERY	153	57	1266	542	1	224	8	10	79
ALASKA									
ANCHORAGE	60	14	374	138	T	52	274	1783	450
ANNETTE	453	128	2903	886	14	193	396	1501	361
BARROW X	26	4	124	71	0	25	56	726	381
BARTER ISLAND V	33	6	179	125	T	57	132	1110	432
BETHEL	101	11	402	148	1	51	135	1255	208
BETTLES	76	16	360	150	0	49	297	1946	551
BIG DELTA	69	7	291	157	T	54	150	1029	254
COLD BAY	109	39	844	252	1	124	224	1430	290
FAIRBANKS	56	8	285	157	T	87	262	1748	511
GULKANA	47	6	282	110	0	52	178	1184	305
HOMER	86	23	586	218	0	77	264	1527	622
ILIAMNA 1969				280	T	67	277	1636	399

State and Station	Relative Humidity (Percent) January 7:00 a.m. EST	January 1:00 p.m. EST	January 7:00 p.m. EST	July 7:00 a.m. EST	July 1:00 p.m. EST	July 7:00 p.m. EST	Wind Speed (m.p.s.) Mean Speed January	July	Fastest Mile (1.6 Kilometers)	Sunshine (% of Possible) January	July	Annual Mean Number of Days Sunrise to Sunset Clear	Partly Cloudy	Cloudy	Precipitation .25mm or More	Snow, Sleet, Hail 25.4mm or More	Thunderstorms	Heavy Fog	Temperature Max 32.2 °C	Min 0 °C	-17.8 °C
ALABAMA																					
BIRMINGHAM	81	63	66	89	62	66	3.8	2.5	29.1	42	59	99	111	155	118	*	59	9	42	61	*
HUNTSVILLE	83	68	71	88	60	65	4.2	2.7	20.6			108	99	158	121	1	59	22	41	65	*
MOBILE	82	63	70	89	60	71	4.8	3.1	28.2			100	118	147	124	*	80	39	81	20	0
MONTGOMERY	82	62	65	90	61	67	3.5	2.6	32.2	48	63	107	110	148	109	*	62	23	69	41	0
ALASKA																			B		
ANCHORAGE	71	72	71	80	74	61	2.6	3.2	27.3	42	45	64	66	235	113	21	1	27	13	191	40
ANNETTE	78	78	74	87	77	69	5.4	3.6	26.8			41	59	265	224	17	1	15	23	82	0
BARROW X	66	67	67	94	91	87	5.1	5.2	25.9			59	52	188	76	7	*	65	*	323	170
BARTER ISLAND V	69	69	69	93	89	86	6.6	4.7	36.2			52	69	192	90	13	*	76	*	313	168
BETHEL	76	76	75	92	85	66	6.3	5.0	27.7			65	59	241	137	17	2	57	12	228	81
BETTLES	72	66	57	83	67	51	2.6	3.0	17.9			86	93	186	105	26	5	8	36	246	139
BIG DELTA	70	71	71	79	73	58	4.8	2.7	33.1			60	91	214	91	15	3	10	36	224	98
COLD BAY	85	85	82	91	89	80	8.0	7.0	32.6			12	47	306	213	19	*	25	*	163	2
FAIRBANKS	68	68	68	78	68	50	1.3	2.9	17.9			69	84	212	102	22	5	21	53	223	122
GULKANA	67	68	64	84	70	48	2.3	3.7	23.2			68	88	209	87	17	5	18	30	238	107
HOMER	77	77	72	92	78	69	3.5	30.2	17.9			68	68	229	143	24	*	9	2	195	13
ILIAMNA 1969	73	74	72	87	79	64	6.6	3.7				81	68	216	137	22	0	12	10	196	45

COMPARATIVE CLIMATIC DATA

This annual publication presents tables of monthly and annual values (averages, totals, or extremes) for selected meteorological elements which portray the climatic conditions for approximately 300 selected locations in the United States, Puerto Rico, and 12 Pacific Islands. The first issue was based upon data available through 1975; subsequent issues are annual updates. Although these same data are presented for each station in the individual issues of LOCAL CLIMATOLOGICAL DATA, ANNUAL SUMMARY WITH COMPARATIVE DATA, the data in this publication are presented in a manner that is particularly helpful for comparing the climates of major population centers. Of the 90 major urban areas with reported populations greater than 150,000 in the 1970 census, 79 are listed by name. Data are presented for weather stations within 30 miles of the other 11 urban areas. The cities are listed alphabetically by state. The tables are presented in two sections: (1) Observed Data, and (2) Climatological Normals.

Observed Data - these tables are for the period of record (years) in the current locale, and are updated annually. Tables are presented for the following data:

Temperature - Highest of Record, Degrees F.
Temperature - Lowest of Record, Degrees F.
Mean Number of Days with Minimum Temperature 32 Degrees F or Less.
Mean Number of Days with Precipitation 0.01 Inch or More.
Snowfall (Including Ice Pellets) - Average Total in Inches.
Wind - Average Speed (MPH).
Wind - Maximum Speed (MPH).
Sunshine - Average Percent of Possible.
Cloudiness - Mean Number of Days: Clear, Partly Cloudy, Cloudy.
Average Relative Humidity (%) - Morning (M) and Afternoon (A).

Climatological Normals - these are 30-year average values computed from data recorded during the period 1941-1970. Normals are updated decennially, for the most recent 30-year period, and/or when changes in the location of instruments make the data non-representative of the previous location. The tables presented are:

Normal Daily Maximum Temperature, Degrees F.
Normal Daily Minimum Temperature, Degrees F.
Normal Daily Mean Temperature, Degrees F.
Normal Heating-Degree Days (July through June).
Normal Cooling-Degree Days (January through December).
Normal Precipitation, Inches.

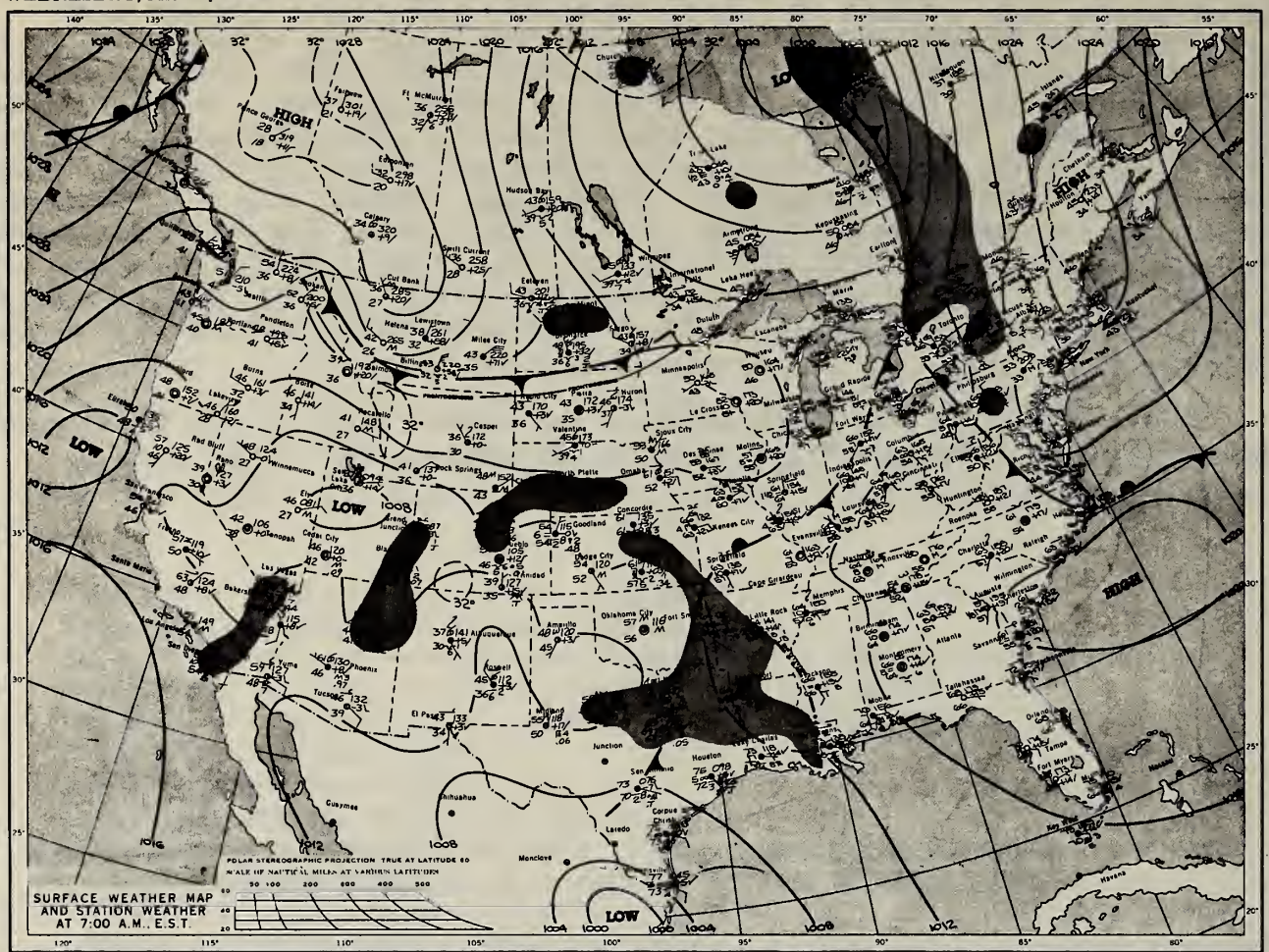
DAILY WEATHER MAPS, WEEKLY SERIES

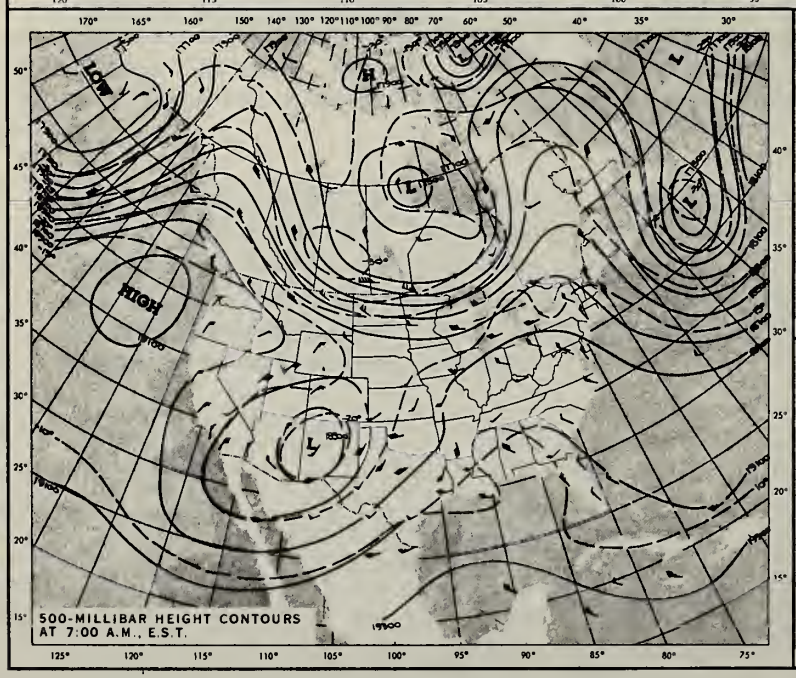
The charts in this publication are a continuation of the principal charts of the former U.S. Weather Bureau publication DAILY WEATHER MAP. They include the Surface Weather Map (covering the contiguous United States), the 500-Millibar Height Contours Chart (covering North America), the Highest and Lowest Temperatures chart, and the Precipitation Areas and Amounts chart. All of the charts for one day are arranged on a single page (Exhibit 32). It is issued weekly, for the period Monday through Sunday. Back issues are available on 35mm microfilm from January 1960 to date from the National Climatic Center. A separate sheet entitled "Explanation of the Daily Weather Map" gives an explanation of the maps together with descriptions of the symbols used on the charts.

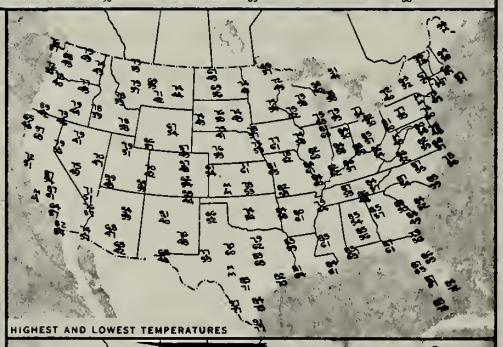
Subscriptions to this publication may be ordered from the Public Documents Department, U.S. Government Printing Office, Washington, D.C. 20402.

EXHIBIT 32

WEDNESDAY, MAY 7, 1969







ENVIRONMENTAL/RESOURCE ASSESSMENT AND INFORMATION

This weekly report was first issued during January 1976 as the WEEKLY WEATHER/CROP ASSESSMENT. The current title (1979) was adopted with the last weekly issue in July 1978.

This publication presents: (1) Summary of Temperature-Related Power Consumption containing a narrative summary of the weekly and seasonal population-weighted heating degree days and temperature-related natural gas consumption with attendant charts and graphs, and a general narrative summary of the pressure, frontal, and temperature patterns for the United States; (2) Agriculture Assessments and Drought Evaluations containing narrative summaries of weather effects on crops and precipitation, temperature, and general synoptic weather patterns for each of seven major grain growing areas of the world (Canada, U.S.S.R., China, Australia, India, South America, Central Africa) including available attendant charts of temperature and precipitation (The WEEKLY WEATHER AND CROP BULLETIN, see pages 49 through 52, presents similar information for the United States); (3) a chart of the Northern Hemisphere Snow and Ice Boundaries; (4) a narrative summary of Major Weather Conditions Affecting World Agriculture with an attendant chart; and (5) a Central Africa Summary containing narrative summaries dealing with current weather related crop problem areas over 22 countries including the Sahel, with attendant charts and graphs.

This publication may be obtained from the Center for Environmental Assessment Services, Environmental Data and Information Service (D242), National Oceanic and Atmospheric Administration, Room 416, Page Building 1, Washington, DC 20235.

This annual publication was first issued for 1971 data under the title ATMOSPHERIC TURBIDITY DATA FOR THE WORLD. It is sponsored by the World Meteorological Organization (WMO) in cooperation with the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA). It is prepared from observational records submitted from stations in the WMO Network for the Monitoring of Background Air Pollution that are operated by member nations of the WMO. Data from additional cooperative stations are also included. Atmospheric turbidity data and atmospheric carbon dioxide (CO_2) sample measurements are processed by NOAA; precipitation chemistry data are processed by EPA.

All issues include monthly tables of atmospheric turbidity. They present the daily average and minimum values for B(500 and 380 nanometers) and Alpha together with the number of observations for each day (Exhibit 33). The daily Alpha value is the average for all observations taken that day. The monthly means (MO) for Alpha and Beta are computed from the monthly mean of all observed B values and also from the monthly mean (*) of the published daily mean B values.

Precipitation chemistry data were added to the 1972 issue when the title was changed to ATMOSPHERIC TURBIDITY AND PRECIPITATION CHEMISTRY DATA FOR THE WORLD. Monthly data are presented for total precipitation and for 12 separate chemical analyses: pH, conductivity, sodium, potassium, magnesium, calcium, chloride, ammonium, nitrate, sulfate, acidity, and alkalinity (see Exhibit 34 for nitrate data). These data are included in all subsequent issues.

Carbon dioxide (CO_2) measurements were added in 1975 when this annual publication was given its present title. Data are presented for each air sample taken during the year (Exhibit 35). Carbon dioxide data are included in all subsequent issues.

Each publication contains detailed descriptions of the observational and analytical methods used to obtain the published data.

EXHIBIT 33

DAILY TURBIDITY

WMO STA NO 72946 — FORT SIMPSON, CANADA — NCC STA NO 06615

LAT. 61 45 N LONG. 121 14 W ELEV. 170 M

	JAN 1976						FEB 1976						
	AVERAGE				MINIMUM		AVERAGE				MINIMUM		
DAY	B500	B380	ALPHA	N	B500	B380	B500	B380	ALPHA	N	B500	B380	DAY
1													1
2													2
3							0.045	0.051	0.479	2	0.042	0.049	3
4													4
5							0.045	0.058	0.900	1	0.045	0.058	5
6													6
7	0.043	0.084	2.383	2	0.041	0.066							7
8													8
9	0.020	0.021	0.214	1	0.020	0.021							9
10							0.057	0.070	1.015	3	0.051	0.060	10
11							0.063	0.094	1.405	2	0.050	0.067	11
12							0.057	0.078	1.132	1	0.057	0.078	12

EXHIBIT 34

WORLD METEOROLOGICAL ORGANIZATION
PRECIPITATION NETWORK DATA

65321 - NITRATE
81 - PRECIP NESSLER'S REAGENT

UNITS - 62 - MG/L-MILLIGRAMS/LITER

		1ST QUARTER			2ND QUARTER			3RD QUARTER			4TH QUARTER			YEARLY			
	YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ARITHMETIC MEAN	STDEV	GEOMETRIC MEAN	STDEV
CZECHOSLOVAKIA SVRATOUCH CZ 8000 101	75	0.77	1.40	0.63	1.67	0.66	0.11	0.59	0.63	0.68	0.58	0.48	0.32	0.731	0.414	0.62	1.91
	76	0.52	1.40	1.47	1.29	0.94	0.97	0.63	0.71	0.52	0.00	0.61	0.42	0.794	0.438	0.52	4.57
IRELAND VALENTIA OBSERVAT EI 8000 101	76	0.01	0.24	0.09	0.12	0.06	0.10	0.12	0.50	0.01	0.01	0.04	0.11	0.122	0.136	0.07	3.08
EL SALVADOR CERRO VERDE ES 2000 101	76				0.00	2.80	0.50	0.00	1.00	0.00							
DENMARK FAROE ISLANDS FO 3000 101	76	0.10	0.12	0.15	0.01	0.11	0.33										
FED REP GERMANY BROTJACKLRIEGEL GE 2000 101	76			2.10	7.00	3.80	3.10	2.00	3.70	3.90	2.80	3.80	2.50	3.474	1.432	3.25	1.44

EXHIBIT 35

ATMOSPHERIC CARBON DIOXIDE FLASK SAMPLES
CO2 MOLE FRACTIONS EXPRESSED IN THE SCRIPPS 1959 ADJUSTED INDEX SCALE

CAPE KUMUKAHI, HAWAII

LAT. 19 31 N LONG. 154 49 ELEV. 3 M

MONTH DAY	1976 SAMPLE 1 PPM	SAMPLE 2 PPM	MONTH DAY	1976 SAMPLE 1 PPM	SAMPLE 2 PPM
MAR 09	329.64	329.33	DEC 01	329.75	328.45
MAR 16	329.70	330.29	DEC 08	329.08	328.01
MAR 23	330.18	330.42	DEC 15	328.13	327.95
MAR 30	331.35	330.98	DEC 28	329.31	329.03
APR 06	332.56	332.57			
APR 13	331.47	331.57			
APR 20	332.64	331.93			
APR 27	331.03	331.28			
MAY 04	333.25	333.51			

HIGH ALTITUDE METEOROLOGICAL DATA

This quarterly publication, issued only on microfilm starting with data for January 1977, contains wind and temperature measurements together with computed values of pressure, density, and speed of sound from a worldwide network of observing stations. The measurements are secured from instruments carried aloft by meteorological rockets and tracked by radar as they fall. Data are presented for significant levels, constant pressure levels, and for each 1 km interval between the maximum height reached by the rocket (usually less than 90 km) and 20 km. Data for rawinsonde observations taken at or near the station site and within 6 hours of the observation time are included when available. The data for each observation are presented in tabular and graphical form (Exhibit 36). A supplemental summary and a period of record comparative data table (means and standard deviations) are also included for each station month (Exhibits 37 and 38).

Initially, high altitude meteorological data reports were presented in a limited publication by the U. S. Army Electronics Research and Development Activity titled DATA REPORT OF THE METEOROLOGICAL ROCKET NETWORK FIRINGS. These reports began in April 1960 with the data for Fall 1959 and Winter 1960. Publication continued by season through the Summer 1962 data, then monthly from September 1962 through March 1964. World Data Center A (WDC-A) began publishing these data on a monthly basis in January 1964 and continued through December 1968. Starting with January 1969 data, the WDC-A publication title was changed to its present title, HIGH ALTITUDE METEOROLOGICAL DATA, to accomodate all types of high altitude meteorological observations. The publicaton format was also changed at that time. It continued to be issued monthly through December 1972. Quarterly issues began in 1973 and continued as a formal publication through the October-November-December 1976 issue. Although data for the period subsequent to December 1976 are not published, they are compiled in the same format as the 1976 publication and placed on microfilm. This microfilm is available on a continuing subscription basis from the National Climatic Center, Federal Building, Asheville, NC 28801.

91366 Y M D GMT TB WS TS AC GC WC TC
USAMC, KWAJALEIN, MARSHALL ISLANDS
08.7N 167.7E 76 12 29 2125 -120 031 010 000 000 01 01

QUESTIONABLE DATA

BASE DATA
GEOM HGT 2375 DECAMTRS WHT WHB THT THB SD SHT SHB BT BP
PRESSURE 030.00 MBS
TEMP -60.1 DEGC 0790 0740 0000 0000 00 0000 0000 01 00

SOUNDING (HGT IN GEOMETRIC DECAMTRS)

HGT	WIND POLAR DEG	WIND POLAR MPS	COMPONENT N-S	COMPONENT E-W	MPS	FV DEGC	TEMP	TC	PRES MB	DENSITY G M^{-3}	SDS MPS	SPC A	SPC B
07900	067	009	-004	-008*	185								
07800	166	015	015	-004*	212								
07700	124	036	020	-030*	227								
07600	111	015	005	-014*	240								
07500	306	028	-016	023*	249								
07400	315	025	-018	018*	248								
07300	325	028	-021	015	248								
07200	320	036	-028	023	241								
07100	311	042	-028	032	234								
07000	290	055	-019	052	225								
06900	282	067	-014	066	210								
06800	267	069	004	069	196								
06700	255	083	016	061	182								
06600	247	081	024	056	172								
06591	246	060	024	055	170	-027			1.013-1	1.435-1	314		
06500	235	052	030	043	155	-024			1.145-1	1.604-1	316		
06400	237	043	023	036	140	-021			1.309-1	1.809-1	316		
06300	254	046	013	044	131	-018			1.493-1	2.038-1	320		
06213	262	045	008	045	120	-015			1.673-1	2.259-1	322		
06200	263	045	005	045	118	-015			1.700-1	2.293-1	322		
06100	274	039	-003	039	109	-012			1.934-1	2.575-1	324		
06087	275	039	-003	039	108	-011			1.965-1	2.614-1	324		
06000	278	038	-005	038	103	-012			2.197-1	2.933-1	324		
05972	282	038	-006	038	102	-013			2.278-1	3.045-1	324		
05900	290	040	-014	038	098	-009			2.497-1	3.293-1	326		
05892	291	040	-014	037	097	-009			2.521-1	3.321-1	326		
05600	307	037	-022	030	091	-009			2.834-1	3.740-1	326		
05700	326	028	-023	016	085	-010			3.217-1	4.256-1	325		
05685	328	027	-023	014	084	-010			3.277-1	4.337-1	325		
05827	338	023	-022	009	081	-007			3.528-1	4.625-1	327		
05800	343	022	-021	006	080	-008			3.651-1	4.804-1	326		

SOUNDING CONSTANT PRESSURE LEVELS (HGT IN GEOPOTENTIAL DECAMTRS)

06005	-003	039	-011	2.000-1	2.661-1	324
05694	-023	023	-009	3.000-1	3.964-1	326
05471	-022	001	-011	4.000-1	5.316-1	325
05302	-020	-013	-017	5.000-1	6.810-1	321
05046	-002	-026	-017	7.000-1	9.504-1	321
04776	-014	-016	-010	1.000+0	1.323+0	325
04247	001	-013	-017	2.000+0	2.722+0	321
03943	-001	-007	-019	3.000+0	4.120+0	319
03733	-003	001	-025	4.000+0	5.612+0	316
03572	-003	009	-029	5.000+0	7.134+0	313
03333	-002	013	-032	7.000+0	1.012+1	311
03067	-001	002	-041	1.000+1	1.500+1	305
02623	000	-024	-053	2.000+1	3.164+1	297
02362	002	-020	-060	3.000+1	4.906+1	293

RAWINSONDE 00 (HGT IN GEOPOTENTIAL DECAMTRS)

						DEGC	
02362						-062	3.000+1
02315						-063	3.240+1
02213						-063	3.820+1
02148						-064	4.250+1
02082						-071	4.740+1
02050	269	007	000	007		-071	5.000+1
02021						-070	5.250+1
01993						-069	5.500+1
01963						-071	5.790+1
01934						-078	6.080+1
01900						-080	6.460+1
01868						-079	6.830+1
01854	062	012	-006	-011		-080	7.000+1
01810						-081	7.570+1
01774						-082	8.070+1
01741						-065	8.560+1
01709						-083	9.070+1
01682						-082	9.530+1
01655	095	021	002	-021		-082	1.000+2
01421	039	011	-009	-007		-068	1.500+2
01242	066	005	-002	-005		-053	2.000+2
01094	034	009	-007	-005		-042	2.500+2
00968	035	015	-012	-009		-032	3.000+2

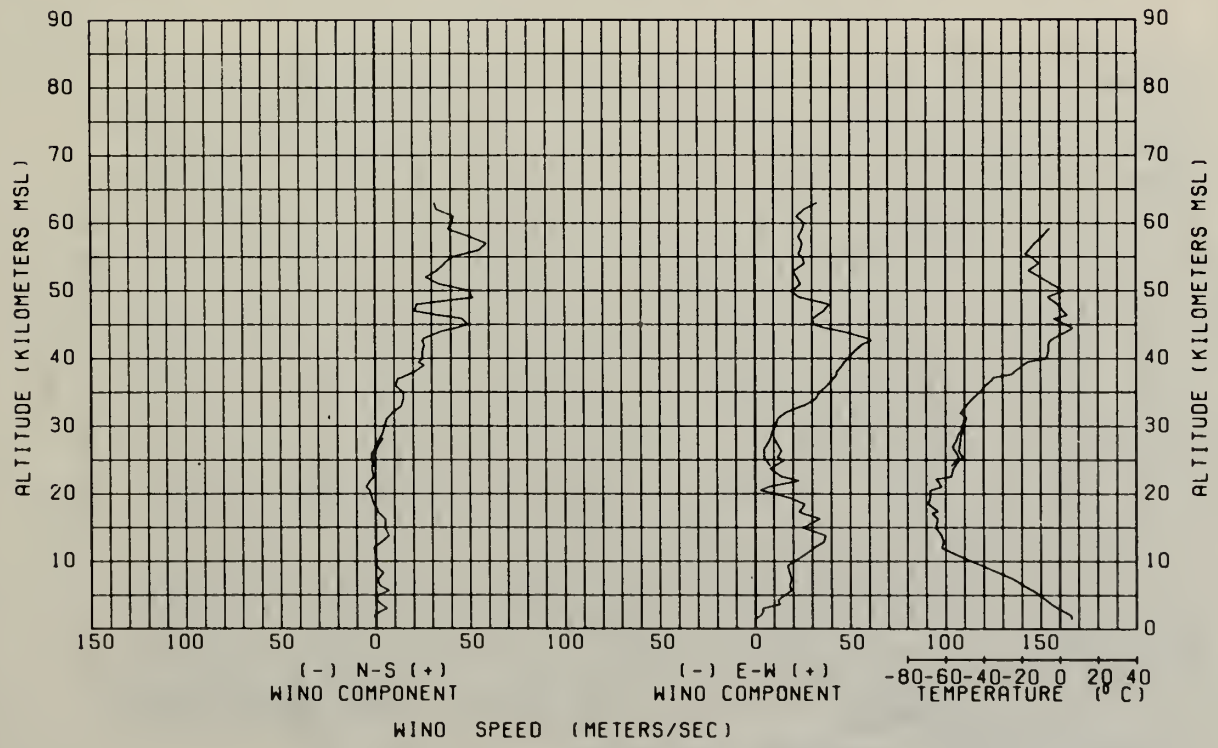
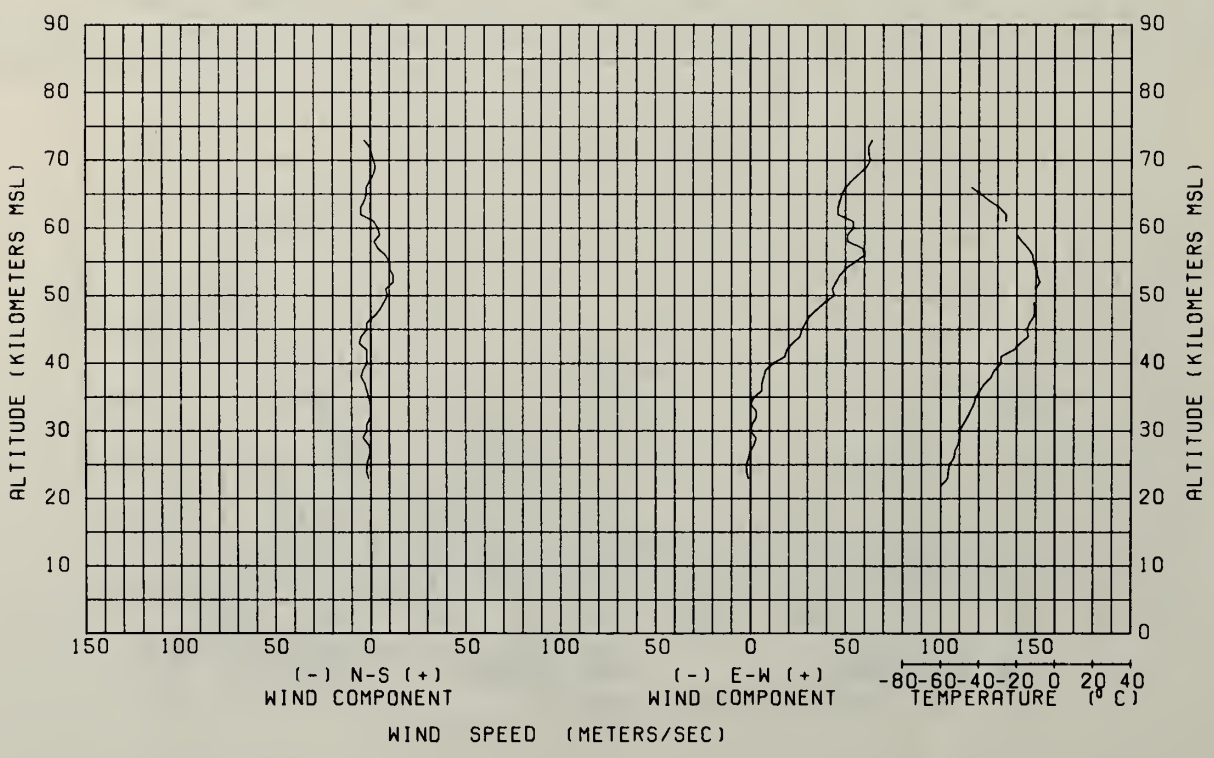


EXHIBIT 37

STATISTICAL RESULTS FOR NOV 1976 AT PMR, POINT MUGU, CALIFORNIA

HEIGHT IS IN KILOMETERS ABOVE SEA LEVEL
THE WIND COMPONENTS AND SPEED OF SOUND ARE IN M/SEC
TEMPERATURE IS IN DEGREES CELSIUS, PRESSURE IS IN MILLIBARS
DENSITY IS IN GRAMS PER CUBIC METER
THE M COLUMN IS THE MEAN COLUMN, THE S COLUMN IS THE STANDARD DEVIATION COLUMN,
AND THE N COLUMN IS THE NUMBER OF VALUES FOR THE M AND S.

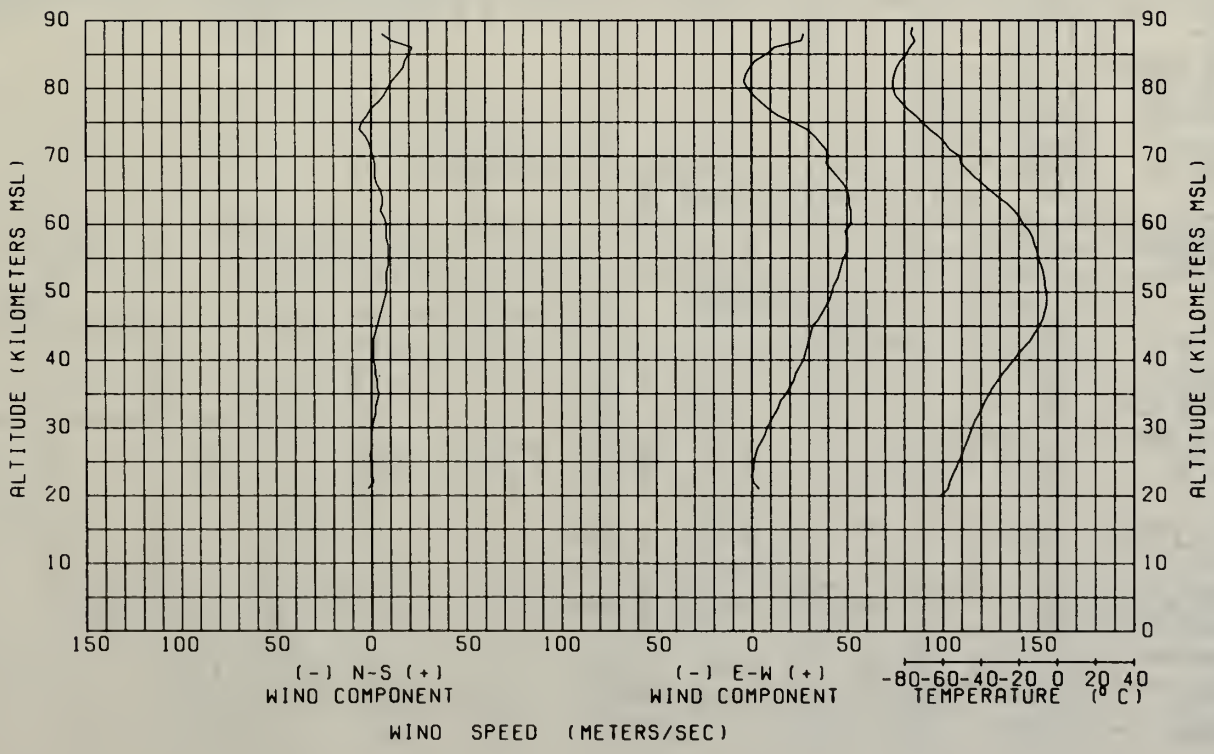
HT	-N+S		-E+W			TEMP			PRESSURE			DENSITY			SPEED OF SOUND		
	M	S	M	S	N	M	S	N	M	S	N	M	S	N	M	S	N
73	-3	18.3	64	19.8	3												
72	0	17.9	62	23.8	3												
71	1	17.9	62	24.5	3												
70	2	16.8	63	22.1	3												
69	3	14.7	61	19.1	3												
68	2	12.4	57	17.7	3												
67	0	11.8	53	17.9	3												
66	-2	10.0	50	18.4	3	-44.0	2.2	3	.088	.009	3	.134	.013	3	303	1.7	3
65	-2	8.6	48	19.1	3	-38.0	3.7	3	.102	.010	3	.152	.015	3	306	2.5	3
64	-3	6.3	47	18.4	3	-34.3	4.5	3	.117	.012	3	.171	.014	3	310	2.9	3
63	-5	3.9	46	19.8	3	-28.0	5.1	3	.135	.013	3	.192	.015	3	313	3.1	3
62	-5	2.4	46	21.5	3	-25.7	5.9	3	.154	.015	3	.217	.016	3	315	3.8	3
61	2	7.8	54	24.1	4	-25.8	8.6	4	.176	.015	4	.247	.014	4	316	5.7	4
60	4	7.5	54	26.5	4												
59	5	8.8	51	23.1	5	-20.0	5.0	3	.237	.012	3	.325	.015	3	319	3.1	3
58	2	9.8	51	21.4	5	-17.3	4.2	3	.270	.014	3	.367	.015	3	321	2.9	3
57	4	8.1	59	24.9	6	-14.0	4.9	3	.307	.015	3	.413	.013	3	323	3.3	3
56	8	7.2	60	24.4	6	-11.7	3.7	3	.348	.016	3	.466	.016	3	324	2.4	3
55	10	8.2	55	20.3	6	-11.3	5.6	3	.397	.018	3	.528	.020	3	325	3.4	3
54	10	10.0	50	19.4	6	-9.7	5.7	3	.451	.020	3	.596	.019	3	326	3.7	3
53	12	9.7	47	17.9	6	-8.3	6.8	3	.512	.022	3	.676	.018	3	326	3.9	3
52	12	7.3	45	14.5	6	-8.0	7.3	3	.582	.023	3	.764	.024	3	327	4.5	3
51	8	6.9	43	14.6	6	-10.3	7.4	3	.661	.023	3	.876	.026	3	325	4.1	3
50	9	6.0	44	18.9	6												
49	7	7.6	39	18.8	6	-11.0	3.7	3	.853	.029	3	1.132	.033	3	325	2.5	3
48	5	6.6	35	17.4	6	-10.7	4.0	3	.869	.031	3	1.286	.030	3	325	2.2	3
47	2	7.1	31	14.4	6	-11.0	3.6	3	1.102	.035	3	1.464	.034	3	325	2.4	3
46	-2	6.2	29	13.5	6	-13.3	2.4	3	1.253	.036	3	1.678	.041	3	323	1.4	3
45	-2	3.8	27	12.5	6	-14.7	3.7	3	1.426	.041	3	1.921	.031	3	322	2.1	3
44	-5	4.5	26	11.3	6	-14.0	3.6	3	1.624	.044	3	2.185	.042	3	323	2.4	3
43	-6	5.0	22	12.5	6	-18.3	5.7	3	1.852	.047	3	2.532	.027	3	320	3.7	3
42	-2	2.0	19	12.3	6	-21.7	6.2	3	2.115	.045	3	2.831	.026	3	318	3.7	3
41	-2	3.8	18	12.7	7	-28.3	5.5	4	2.420	.040	4	3.444	.028	4	314	3.7	4
40	-2	5.8	12	13.4	7	-28.5	3.6	4	2.777	.039	4	3.959	.028	4	314	2.1	4
39	-4	5.3	8	15.5	7	-31.8	3.2	4	3.190	.037	4	4.601	.081	4	312	2.1	4
38	-5	5.0	7	13.0	7	-33.5	3.4	4	3.670	.043	4	5.336	.116	4	311	2.2	4
37	-3	4.5	6	14.4	7	-37.0	4.1	4	4.228	.048	4	6.241	.081	4	308	2.2	4
36	-2	6.6	6	11.7	7	-39.3	3.3	4	4.881	.055	4	7.274	.111	4	307	2.6	4
35	-1	3.4	2	11.9	7	-41.8	3.1	4	5.643	.058	4	8.498	.099	4	305	1.9	4
34	0	3.1	0	12.8	6	-42.5	2.5	4	6.531	.062	4	8.868	.125	4	305	1.8	4
33	0	4.3	3	14.0	6	-44.3	3.6	4	7.565	.067	4	11.520	.180	4	304	2.5	4
32	0	4.4	3	14.8	6	-46.0	1.2	4	8.773	.068	4	13.453	.129	4	302	1.1	4
31	-2	5.1	1	15.3	6	-48.0	.7	4	10.183	.080	4	15.745	.127	4	301	.7	4
30	-2	4.7	0	12.1	6	-50.3	1.3	4	11.840	.093	4	18.510	.224	4	299	.8	4
29	-4	2.3	3	8.9	4	-50.0	1.2	4	13.780	.117	4	21.525	.275	4	300	.8	4
28	-1	1.5	2	8.8	4	-50.8	.8	4	16.038	.138	4	25.115	.198	4	299	.8	4
27	0	1.9	0	9.8	4	-52.5	2.3	4	18.683	.145	4	29.483	.230	4	298	1.5	4
26	-1	2.3	-1	8.5	4	-53.0	2.4	4	21.783	.140	4	34.480	.208	4	297	1.6	4
25	-2	1.8	-2	7.8	4	-55.3	2.2	4	25.420	.144	4	40.615	.413	4	296	1.4	4
24	-2	.8	-2	6.4	4	-56.0	2.1	4	28.700	.161	4	47.673	.541	4	286	1.7	4
23	-1	.8	-1	5.9	3	-56.3	2.2	4	34.718	.218	4	55.828	.871	4	285	1.4	4
22						-59.3	.9	3	40.530	.255	3	66.093	.644	3	293	.8	3



STATISTICAL RESULTS FOR OCT FOR THE YEARS 1868 THRU 1876 INCLUSIVE AT PMR, POINT MUGU, CALIFORNIA

HEIGHT IS IN KILOMETERS ABOVE SEA LEVEL
THE WIND COMPONENTS AND SPEED OF SOUND ARE IN M/SEC
TEMPERATURE IS IN DEGREES CELSIUS, PRESSURE IS IN MILLIBARS
DENSITY IS IN GRAMS PER CUBIC METER
THE M COLUMN IS THE MEAN COLUMN, THE S COLUMN IS THE STANDARD DEVIATION COLUMN,
AND THE N COLUMN IS THE NUMBER OF VALUES FOR THE M AND S.

HT	-N+S			-E+W			TEMP			PRESSURE			DENSITY			SPEED OF SOUND		
	M	S	N	M	S	N	M	S	N	M	S	N	M	S	N	M	S	N
88							-75.7	7.4	3	.002	.000	3	.004	.001	3	282	5.4	3
88	6	14.2	27	13.8	3		-76.5	8.9	6	.003	.000	6	.004	.001	6	281	7.2	6
87	11	8.8	26	15.6	5		-74.4	14.2	9	.003	.001	8	.005	.000	8	282	8.8	9
86	22	11.2	12	12.8	12		-77.1	12.5	12	.004	.000	12	.006	.001	12	281	8.7	12
85	20	14.1	8	16.8	18		-78.8	11.0	16	.004	.001	16	.007	.001	16	280	8.1	16
84	18	14.6	2	16.8	18		-82.1	10.7	16	.005	.001	16	.008	.001	16	277	7.6	16
83	17	15.0	-1	16.3	18		-84.1	10.3	16	.006	.000	16	.011	.001	16	276	7.4	16
82	14	16.0	-3	15.1	18		-85.3	10.4	16	.007	.001	16	.013	.001	16	275	7.5	16
81	11	17.0	-4	13.5	18		-86.0	10.2	16	.008	.001	16	.016	.001	16	274	7.5	16
80	8	17.9	-2	12.1	20		-85.8	9.8	16	.010	.001	16	.018	.002	16	274	7.3	16
79	7	18.9	1	11.3	20		-84.7	8.1	16	.012	.001	16	.022	.002	16	275	6.4	16
78	4	18.2	5	11.4	20		-81.6	7.8	16	.014	.001	16	.026	.002	16	277	5.5	16
77	0	19.4	8	12.3	20		-78.3	7.0	16	.017	.002	16	.030	.002	16	280	5.1	16
76	-2	18.8	14	13.3	20		-74.0	6.4	16	.020	.002	16	.035	.002	16	283	4.5	16
75	-5	20.5	22	15.0	21		-70.5	6.1	16	.024	.002	16	.041	.003	16	285	4.4	16
74	-6	18.3	28	15.8	23		-66.8	5.8	16	.028	.003	16	.047	.004	16	288	4.1	16
73	-3	18.8	33	15.4	27		-62.3	6.2	16	.033	.002	16	.054	.005	16	281	4.2	16
72	-1	16.9	36	17.0	30		-58.8	6.4	16	.038	.003	16	.062	.005	16	293	4.4	16
71	0	15.3	38	23.7	31		-56.3	6.6	15	.045	.003	15	.072	.006	15	285	4.4	15
70	1	14.8	40	28.2	33		-51.1	8.4	21	.052	.004	21	.082	.007	21	288	5.6	21
69	2	14.8	38	31.6	34		-50.5	8.4	21	.061	.004	21	.085	.008	21	288	5.6	21
68	2	13.0	42	31.8	35		-46.9	8.7	22	.071	.005	22	.108	.008	22	301	5.7	22
67	2	12.1	45	28.1	35		-43.4	7.1	25	.083	.006	25	.125	.008	25	304	4.8	25
66	3	12.7	48	25.5	35		-38.2	5.2	26	.086	.007	26	.142	.008	26	306	3.4	26
65	5	12.3	50	23.3	35		-35.2	8.2	27	.110	.008	26	.162	.010	26	308	5.8	27
64	6	11.9	51	22.6	35		-30.8	11.6	30	.128	.008	28	.185	.013	28	312	7.4	30
63	6	11.7	51	21.8	37		-25.9	11.0	33	.148	.013	31	.211	.015	31	315	6.8	33
62	5	11.5	52	20.5	47		-22.4	8.8	45	.173	.016	43	.241	.017	43	317	5.7	45
61	7	8.8	52	18.9	56		-19.6	8.0	50	.189	.016	48	.273	.018	48	318	5.0	50
60	8	11.2	52	18.0	72		-17.7	6.8	59	.227	.018	57	.310	.020	57	320	4.4	59
59	8	11.1	48	18.9	88		-14.5	6.3	73	.263	.026	71	.354	.032	71	322	4.0	73
58	8	10.0	50	17.7	106		-12.8	6.1	85	.300	.028	83	.402	.034	83	324	3.8	85
57	8	8.2	50	16.6	110		-11.8	6.1	80	.341	.031	88	.455	.036	88	324	3.7	80
56	8	8.8	50	16.8	113		-10.4	6.6	81	.388	.033	88	.514	.038	88	325	4.0	91
55	9	8.0	48	17.2	114		-8.8	6.8	81	.440	.037	88	.583	.044	88	325	4.3	81
54	8	9.0	47	17.5	114		-8.4	7.0	82	.500	.042	90	.658	.048	80	326	4.4	82
53	8	8.7	46	17.7	115		-7.4	6.7	82	.568	.046	80	.744	.055	80	327	4.1	82
52	8	8.7	45	17.5	117		-6.7	6.2	82	.644	.051	80	.842	.062	80	327	3.8	82
51	8	8.8	43	17.8	118		-6.5	6.6	92	.731	.058	90	.855	.071	80	327	4.1	92
50	8	8.2	42	18.0	120		-5.6	6.2	93	.829	.064	81	1.080	.078	81	328	3.8	83
49	7	8.1	41	17.4	121		-5.5	5.7	94	.840	.071	82	1.224	.081	82	328	3.5	84
48	6	8.2	38	16.7	121		-5.7	5.5	85	1.065	.081	83	1.388	.102	83	328	3.5	85
47	5	7.7	37	16.0	120		-6.7	6.2	93	1.209	.081	81	1.582	.118	81	327	3.8	83
46	4	7.5	35	15.8	121		-7.6	5.7	85	1.371	.102	83	1.800	.131	93	327	3.5	85
45	3	7.0	32	16.6	122		-9.4	5.3	86	1.558	.115	94	2.060	.151	84	326	3.2	86
44	2	6.2	31	16.2	122		-11.8	5.5	97	1.772	.128	95	2.363	.169	95	324	3.5	87
43	1	6.0	30	16.7	122		-13.8	5.5	96	2.017	.147	94	2.712	.186	84	323	3.4	86
42	1	5.8	28	16.6	122		-17.1	5.4	87	2.297	.164	85	3.127	.218	85	321	3.4	97
41	1	5.6	28	15.4	122		-20.4	5.0	86	2.625	.186	94	3.620	.248	84	319	3.2	96
40	1	5.6	27	14.7	122		-22.8	5.0	84	3.002	.213	92	4.181	.285	82	317	3.2	94
39	2	6.0	25	14.6	121		-25.8	4.6	86	3.437	.238	94	4.846	.323	94	315	3.0	86
38	2	5.8	23	13.3	121		-28.7	4.4	85	3.842	.273	93	5.621	.377	83	313	2.8	85
37	3	5.5	22	12.1	121		-31.3	4.4	85	4.530	.310	83	6.527	.441	83	312	2.8	85
36	3	5.5	20	11.6	121		-33.8	3.8	94	5.206	.355	92	7.578	.502	82	310	2.5	84
35	4	5.8	18	11.5	121		-35.7	4.3	84	5.888	.406	82	8.789	.575	92	308	2.8	84
34	3	5.1	15	11.2	120		-37.8	4.1	84	6.918	.464	82	10.243	.654	92	308	2.7	84
33	2	4.6	14	10.6	118		-38.4	4.1	82	7.887	.532	80	11.817	.751	80	307	2.7	92
32	2	4.1	12	10.6	118		-41.3	4.4	80	8.243	.613	88	13.880	.865	88	305	2.9	80
31	1	3.8	10	10.4	115		-43.3	4.5	88	10.700	.707	86	16.224	1.005	86	304	2.8	88
30	0	3.6	8	9.6	112		-44.7	3.8	80	12.403	.847	78	18.918	1.211	78	303	2.6	80



This publication is prepared monthly and annually for each State or combination of States, except Alaska. The State combinations are: Maryland-Delaware; and New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont). Monthly and annual publications for Puerto Rico were initiated in July 1971. A predecessor publication, which began in January 1940, was known as the HYDROLOGIC BULLETIN and was issued by river drainage districts. During June through September 1948, depending on the river drainage district, that publication was discontinued and hourly precipitation values were included in the monthly issues of CLIMATOLOGICAL DATA for each State or combination of States. This continued until October 1951, when these data were published under the present title. Beginning with the January 1973 issue, monthly maximum amounts of precipitation for selected intervals from 15 minutes to 24 hours are presented (only stations equipped with special gauges that measure to tenths of an inch have data for time intervals other than whole hours).

The current monthly issue presents daily, hourly, and monthly maximum short duration precipitation data for stations equipped with the automatic recording gages (Exhibits 39 and 40). The annual issue contains a station index, with monthly and annual totals of precipitation (Exhibit 41), and annual maximum precipitation by time categories (Exhibit 42). The June and December issues normally present late reports and corrections.

EXHIBIT 39

DAILY TOTALS

STATION	TOTAL	DAY OF MONTH 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
APALACHICOLA WSO AP	2.62				.05		.13			1.52	.71	.07	.09							.03		.02										
BELLE GLADE HACN GATE	7.33	.45				.15	.80					.30	.15	1.07			.86	.55	.36	.01	.36					.16				.71	1.38	.02
BLACKMAN	9.00				.31		.29	.08	.02	.34	.50	.29		1.44	.12	.32		.06	.38	2.54		.87	1.24								.20	
BOCA RATON	6.1	.8	.4		.4	.7	.3			.1			.4				.2			.4			1.0	1.4								
BRISTOL	5.73			1.80			.85	.09	.17	.09	.60	.61	.54		.46													.52				
BROOKSVILLE 7 SSW	7.4	1.2	.3			.1	.1		1.0	2.1	1.0		.2	.1	.4	.1				.1											.3	.4
CANAL POINT GATE 5	6.83	.69	.04	.02		.18	.35	.02	.25	.15	.71	.46	.10	.03	.02		.47	.05		.17	.05	.01	.25	.15	.66	.37	.03			.08	1.52	
CLEWISTON U S ENG	9.4	1.5	1.1	.2			1.1		.5	.4	1.4	.1	2.1		.3		.1		.1				.3	.1						.1		
CROSS CITY 2 WNW	9.3	.1	.5	1.0	.2				.4		1.5	.7	.2	.7	1.2			2.0			.1	.1							.4	.1		.1
DAYTONA BEACH WSO AP	7.99	1.33	1.27				.27					2.07	.19	2.06	.07				.46					.07	.13							.07
DOWLING PARK 1 W	6.4	.1	.5	1.9			.7		.8	.1	1.1	.1	.3		.1					.2			.2				.3					
FORT MYERS WSO AP	11.7		1.1	.1			.2	.3	.3	.1	1.3		.2		.1		1.7	.4	.1	.8				4.8							.2	
GAINSVILLE 3 WSW	9.7	4.0	.8	.1		.1	1.4		.3		1.0	1.3		.1			.1		.5													
GRACEVILLE	3.8			.2		.7	.1	.1	1.2	.4	.3	.3			.2		.1	.1		.1												
GRADY	6.5		1.4	.8			.4		.9		.7	.1	.2	.1			.3	.1	.1										1.4			
HOMESTEAD EXP STA	8.1			.1		3.7	.1		.8			.3				.1	.2			1.1			.5	.1	.5					.2		.4
INGLIS 5 SSW	4.3	3.2	.1			.4	.3			.2			.1																			
JACKSONVILLE WSO AP	2.39	.07					.11		.19		.03	.59			.02			.05	.49										.84			
KEY WEST WSO AP	2.69	.66		.01	.31		.22	.35		.04	.01					.02					.20		.47	.13	.26						.01	
LAKELAND WSO C1	8.58	.45	.65	1.63		1.55	.10	.01	.09		.57	.02	.16	.03	.27			2.93	.04	.04												.04
LISBON	3.0	.4	1.5	.1		.5			.1					.4																		
LYNNE	-	-	-	-	-	-	-		1.64	.05	.71		.24		.39	.05	.82	.09			.08								2.67			
MARINELAND	3.2	2.3	.4				.1					.3		.1																		
MELBOURNE	6.9		1.0			.1	.2						3.6	1.4					.1						.5							
MIAMI WSMO AP	3.93	.11	.68		.26	.16	.33	.17				.15	.19	.01		.01				.12			.62	.70	.30								.12
MIAMI WSO C1	6.29	.01	.58		.33	.03	.41	.39	.17	.55			.13				.02			2.30			.98	.25	.07						.06	.01
MONTICELLO 3 W	6.8			.2		.2	.2	2.6	.7			.1	.3			.6			1.5	.3		.1										
MOORE HAVEN LOCK 1	2.56						.46				.20	.02	.28						.02	.82			.52	.22							.02	
NICEVILLE	6.6				.5		.6		.1	.3	1.4	.5	.3					.1		2.7		.1										
NORTH NEW AVR CANAL 2	4.87		1.18				.34						1.37	.39							.55		.26	.06	.04		.18			.50		
ORANGE CITY TOWER	3.6	.4	.2		.2		.1			.3		1.1	.1	.1	.1	.1																.9
ORLANDO WSO MCCOY	5.13	.03	.05	.12	.26	1.05			.02	.04		1.35	1.09		.01	.34			.02	.70			.04									.01
ORTONA LOCK 2	9.52	1.39	.01	.14			1.15		.19			.09	2.30				1.05	.22	.06	1.90	.04			.28	.04			•	•	.60	.07	
PANACEA 4 SSE	4.8			.2	1.0		.1			.1	1.8	.3	.4	.1	.2					.1	.1	.4										
PANAMA CITY 5 NE	6.4	.1		.3	.2	.8	.1	.2	.5	.5	1.3	.4	.5							1.2		.3										
PARRISH	9.3	.1	1.6	2.1					.5	1.6		.1	.1	.2	.1			.4		1.1						1.2				.2		
PENNSUCO 5 WNW	3.1					1.0	.6	.1	.1			.1									.1			.3	.3					.2	.1	.2
PORT MATACA 5 L CANAL	6.33	1.02	.04	.02	.05		.48		.03	.68	.02	.35	.16	.01						1.00	.02	.02		.14	1.16					.48	.65	
RAIFORD STATE PRISON	8.3	2.8	2.6			.2			.1		.1	.5	.1		.7		.1	.7	.3				.1									
SAINT LEO	5.3	.7	.4	.7		.2			.7	1.4	.1		.1	.1		.5				.1					.2	.1						
ST LUCIE NEW LOCK 1	-		.40	.02	.03		.48	.26	.22		.44	.20	-	-	-				-	-	-	-	-	-	-							
ST PETERSBURG	8.7	.6	.5				1.1	.2	1.1	.1			2.2	.5		.6		.3		1.3						.1					.1	
TALLAHASSEE WSO AP	7.92			.74		.06	.16	.01	.60	.03	1.04	.69	.70	.28	1.76	.16				1.17		.16					.03	.31				.02
TAMIAMI TRAIL 40 MI BEND	3.4			.1	.4	.2	.7				.1	.1								.4			.1		.3						1.0	
TAMPA WSMO	5.97	.82	.33			.11	.58			1.18		.08	.07			.66		.31					.34	.09	.21					.14	.79	.26
TRAIL-GLADE RANGES	9.5	1.2	.3		.1	.8	.4	.7	.2			2.1	.4				.1		.2		1.6			.2	.1						1.1	
VENICE	6.1		.8		.3			.2	.3	1.9	.1		.1	.1		.5								.8	.2			.5				.3
VENUS 3 SE	8.76		1.66	.03	.03	1.70	.34					.95	.40	.35		.14		•	.35	.74			.86	.67	.43							.11
VERO BEACH 4 W	-	-	-	-	.2		.5		.2			.8	.1		.4			1.6	.1						.2							-
WAUSAU 2 SSW	6.1			1.4	1.0		.1	.4	.5	.6	.4	.1	.1			.1	.6				.1	.1					.3			.3		
WEST PALM BEACH WSO AP	2.27	1.15			.15	.02	.13	.11	.05		.05		.12						.04				.02	.05	.31						.07	
WOODRUFF DAM	4.2				1.7		.8		.3		.2	.1	.1							.7			.1	.1							.1	

EXHIBIT 40

HOURLY PRECIPITATION

HOURLY AMOUNTS

FLORIDA
JULY 1978

STATION	DATE	A. M. HOUR ENDING 1	2	3	4	5	6	7	8	9	10	11	12	P. M. HOUR ENDING 1	2	3	4	5	6	7	8	9	10	11	12	TOTAL
		MONTHLY MAXIMUM AMOUNTS																								
		HOURS			1			2			3			6			12			24			ACCUMULATION			
		MINUTES			15			30			45			60			120			180						
		(APPLY HEADING AS APPROPRIATE)																								
CROSS CITY 2 WNW	17						.1	.1		.1																.3
	18									.5																.5
	19					.1											.1	1.7								1.9
	20												.1													.1
	27										.3	.2			.4		.1									1.0
	28		.5	.6	.1		.1		.1			.2	.4		.1		.8			.1						3.0
	31						.2	.2					.5			.1										1.0
		AMOUNT			1.8			2.0			2.0			3.1			4.3			4.8						
		DATE/TIME OF ENDING			12/7:00P			12/7:00P			12/7:00P			16/11:00A			16/1:00P			16/12:00A						
		AMOUNT			1.3			1.6			1.7			1.9			2.0			2.0						
		DATE/TIME OF ENDING			19/4:15P			19/4:30P			19/4:45P+			12/6:45P			12/7:00P			12/7:00P						

EXHIBIT 41

STATION INDEX WITH PRECIPITATION TOTALS

FLORIDA
1977

Station	Index No.	County	Drainage	Latitude N.	Longitude W.	Elevation ft.	Years of record	Changes during year: Month opened	Month closed	January	February	March	April	May	June	July	August	September	October	November	December	Annual
APALACHICOLA WSO AP	0211	FRANKLIN	5	29 44	85 02	19	78			3.94	3.54	3.65	.57	.72	.30	5.73	6.92	4.09	.99	4.49	3.69	38.63
BELLE GLADE HRCN GATE	0616	PALM BEACH	7	26 42	80 43	31	36			4.33	.66	.31	.91	8.04	1.98	6.61	8.51	10.44	1.77	3.55	3.60	52.73
BLACKMAN	0765	OKLAOOSA	5	30 56	86 39	175	31			6.38	1.53	11.23	2.22	1.47	8.75	9.25	13.69E	5.09	4.79	5.67	4.46E	74.53
BOCA RATON	0845	PALM BEACH	2	26 22	80 05	13	36			4.2	1.6	.0	1.5	7.6	6.3	4.5	7.4	8.5	3.1	6.6	5.1	56.6
BRISTOL	1020	LIBERTY	1	30 25	84 59	160	34			5.21	1.79	3.59	.83	3.17	2.00	7.39	7.42	8.80	1.52	5.97	4.11	51.80
BROOKSVILLE 7 SSW	1048	HERNANOO	5	28 28	82 27	67	6			4.0	2.1	2.0	1.0	1.0	2.3	8.1	9.3	4.7	.8	2.0	3.5	40.8
CANAL POINT GATE 5	1271	PALM BEACH	7	26 52	80 38	96	38			3.47	.33	.33	.21	2.74	6.87	1.32	5.78	12.23	1.02	5.30	6.23	45.83
CLEWISTON U S ENG	1654	HENDRY	7	26 45	80 55	20	29			3.1	1.2	2.3	.1	9.4	4.8	5.5	6.2	8.3	2.0	11.3	4.1	58.3
CROSS CITY 2 WNW	2008	DIXIE	5	29 39	83 10	42	12			-	4.1	2.5	.8	2.0	-	E 5.3	-	-	.4	3.3	6.3	-
DAYTONA BEACH WSO AP	2158	VOLUSIA	2	29 11	81 04	30	64			4.69	2.45	1.43	.41	4.61	1.15	2.23	7.91	6.55	1.46	3.04	4.74	40.67
DOWLING PARK 1 W	2391	LAFAYETTE	10	30 15	83 15	54	31			4.3	3.5	2.7	.5	2.1	4.1	3.7	6.6	3.8	.0	4.9	5.8	42.0
FORT MYERS WSO AP	3186	LEE	5	26 35	81 52	15	86			3.5	.2	.1	.7	6.5	9.3	9.7	9.9	9.2	.4	1.5	2.7	53.7
GAINESVILLE 2 WSW	3321	ALACHUA	8	29 38	82 22	92	85			3.3	3.9	1.2	.8	.4	2.4	1.3	7.2	5.7	.2	2.0	5.2	33.6
GRACEVILLE	3598	JACKSON	3	30 58	85 31	155	37			5.9	2.6	6.7	4.0	.5	2.7	2.1	4.6	6.6	.7	6.6	3.6	46.6
GRADY	3543	LAFAYETTE	10	29 57	82 57	90	33			3.5	4.4	2.5	.8	3.4	1.6	7.1	7.6	7.2	.2	3.6	7.6	49.5

EXHIBIT 42

ANNUAL MAXIMUM PRECIPITATION

BY TIME CATEGORIES

FLORIDA
1977

STATION		HOURS	1	2	3	6	12	24	ACCUMULATION
		MINUTES	15	30	45	60	120	180	
		(Apply heading as appropriate)							
APALACHICOLA WSO AP		AMOUNT	1.45	1.79	1.91	2.93	3.42	3.73	
		DATE/TIME OF ENDING	NOV 22/10:00P	NOV 22/10:00P	NOV 22/11:00P	JUL 18/2:00P	JUL 18/1:00P	JUL 18/6:00P	
BELLE GLADE HRCN GATE		AMOUNT	2.13	2.59	2.65	2.93	2.99	3.25	ACC. 4.00
		DATE/TIME OF ENDING	SEP 3/5:00P	SEP 3/5:00P	SEP 3/6:00P	SEP 3/5:00P	SEP 3/6:00P	SEP 3/6:00P	MAY 10/1:00P
BOCA RATON		AMOUNT	2.6	4.1	4.8	4.9	5.1	5.2	
		DATE/TIME OF ENDING	NOV 24/2:00A	NOV 24/2:00A	NOV 24/3:00A	NOV 24/4:00A	NOV 24/12:00A	NOV 24/4:00P	
		AMOUNT	1.1	1.9	2.7	3.6	4.6	4.9	ACC. .1
		DATE/TIME OF ENDING	NOV 24/1:00A	NOV 24/1:45A	NOV 24/1:30A	NOV 24/1:45A	NOV 24/2:30A	NOV 24/3:30A	DEC 8/0:30P
BRISTOL		AMOUNT	1.11	1.63	1.73	1.82	2.59	2.99	ACC. 1.98
		DATE/TIME OF ENDING	MAY 30/6:00P	SEP 6/12:00A	MAY 30/6:00P	SEP 6/4:00P	SEP 6/10:00P	SEP 6/12:00P	AUG 27/7:00P

LOCAL CLIMATOLOGICAL DATA

This publication comprises two issues-1. LOCAL CLIMATOLOGICAL DATA, MONTHLY SUMMARY and 2. LOCAL CLIMATOLOGICAL DATA, ANNUAL SUMMARY WITH COMPARATIVE DATA. Although they are published individually for about 300 stations, some stations are added and other stations deleted from time to time. Currently (1979), they are published individually for those stations listed on page 35.

LOCAL CLIMATOLOGICAL DATA, MONTHLY SUMMARY presents basic climatological data together with a table of hourly precipitation data for the month on page 1 (Exhibit 43). The second page contains a listing of observations at 3-hour intervals for each day (Exhibit 44).

Predecessor issues were first published as the MONTHLY METEOROLOGICAL SUMMARY in 1897. In 1948, the name was changed to MONTHLY CLIMATOLOGICAL SUMMARY; and in 1952, to its present title. The earlier issues varied greatly in format and content from station to station and from time to time. They ranged from a postcard size single-table issue to a seven-page issue containing numerous tables of current and comparative data.

A monthly supplement to the LOCAL CLIMATOLOGICAL DATA was published from 1949 through 1964. It contained frequency tables, or tables of averages as follows: temperature versus wind speed-relative humidity occurrences (hourly observations); wind direction versus wind speed occurrences; hourly and daily occurrences of precipitation amounts; ceiling-visibiity occurrences (hourly observations); occurrences of weather by hour of day; averages by hours; 24-hour averages; and occurrence of weather by wind direction. It also contained a table showing hourly observations of sky condition, ceiling, visibility, weather, station pressure, temperature, wet bulb temperature, dewpoint, relative humidity, and wind similar to Exhibit 44. The supplement was issued for stations for which 24-hourly observations were available daily. Changes in format were made from time to time. The title from 1949 through 1951 was SPECIAL METEOROLOGICAL SUMMARIES, and from 1952 through 1964 the title was LOCAL CLIMATOLOGICAL DATA, MONTHLY SUPPLEMENT.

The LOCAL CLIMATOLOGICAL DATA, ANNUAL SUMMARY WITH COMPARATIVE DATA was originally issued in 1909 as the ANNUAL METEOROLOGICAL SUMMARY. It was changed to LOCAL CLIMATOLOGICAL SUMMARY in 1949, and in 1952 was changed to LOCAL CLIMATOLOGICAL DATA WITH COMPARATIVE DATA. The words ANNUAL SUMMARY were incorporated in the title in 1966. It contains the following information and data: a narrative climatological summary; a table of meteorological data for the current year (Exhibit 45); a table of normals, means, and extremes covering varying long periods of time (Exhibit 46); and sequential tables of monthly and annual values of average temperature, total precipitation, total snowfall, total heating-degree days, and total cooling-degree days (Exhibit 47). Also included is a Station Location table showing in detail a history of, and related information about, changes in the location and exposure of instruments (Exhibit 48).

Most issues that are 2 or more years old are out of print. All issues have been filmed and can be provided on microfiche or as paper copy prepared from the microfiche.

EXHIBIT 43

JUNE 1979
ASHEVILLE, NORTH CAROLINA
NATIONAL WEATHER SERVICE OFC
ASHEVILLE AIRPORT

Local Climatological Data

MONTHLY SUMMARY

LATITUDE 35° 26 ′N LONGITUDE 82° 33 ′W ELEVATION (GROUND) 2140 FT. STANDARD TIME USED: EASTERN WBAN #03812

DATE 1	TEMPERATURE °F MAXIMUM 2	MINIMUM 3	AVERAGE 4	DEPARTURE FROM NORMAL 5	AVERAGE DEW POINT 6	DEGREE DAYS BASE 65° HEATING (SEASON BEGINS WITH JULY) 7A	COOLING (SEASON BEGINS WITH JAN.) 7B	WEATHER TYPES ON DATES OF OCCURRENCE 8	SNOW, ICE PELLETS OR ICE ON GROUND AT 07AM IN. 9	PRECIPITATION WATER EQUIVALENT IN 10	SNOW, ICE PELLETS IN. 11	AVG. STATION PRESSURE IN. ELEV. 2170 FEET M.S.L. 12	WIND RESULTANT DIR. 13	RESULTANT SPEED M.P.H. 14	AVERAGE SPEED M.P.H. 15	FASTEST MILE SPEED M.P.H. 16	FASTEST MILE DIRECTION 17	SUNSHINE MINUTES 18	PERCENT OF POSSIBLE 19	SKY COVER TENTHS SUNRISE TO SUNSET 20	MIDNIGHT TO MIDNIGHT 21	DATE 22
1	64	85	75	7	67	0	10	2	0	.07	0	27.86	35	6.6	7.6	13	34	527	61	9	7	1
2	65	80	73	5	66	0	6	1 3 8	0	.04	0	27.85	30	3.6	4.9	13	33	436	50	6	5	2
3	78	65	72	4	68	0	7	23	0	.12	0	27.71	10	.5	5.0	10	34	45	5	10	10	3
4	80	59	70	2	61	0	5		0	0	0	27.87	34	9.7	9.8	16	34	696	60	4	5	4
5	80	59	70	1	63	0	5	1	0	0	0	27.86	19	5.9	6.8	12	22	723	63	4	6	5
6	81	56	70	1	82	0	5	1 8	0	0	0	27.74	18	3.7	3.9	13	20	442	51	6	8	6
7	61	62	72	3	68	0	7	1 3 8	0	.96	0	27.84	14	5.5	6.3	14	12	268	31	6	9	7
8	80	67	74	5	70	0	9	1	0	.02	0	27.95	14	4.7	5.3	12	17	197	23	9	9	8
9	63	65	74	4	69	0	9	2 6	0	.10	0	27.94	17	2.4	4.2	13	09	388	45	6	7	9
10	64	66	76	6	71	0	11	1 3 8	0	T	0	27.61	26	2.7	6.3	14	34	245	28	6	9	10
11	73	57	65	-5	53	0	0	1 3	0	.07	0	27.76	33	10.3	10.6	30	33	607	93	1	3	11
12	78	46*	62	-8	52	3	0		0	0	0	27.66	33	7.6	9.1	22	32	672	100	0	0	12
13	79	49	64	-6	55	1	0		0	0	0	27.98	14	1.9	4.0	9	13	752	66	1	1	13
14	78	50	64	-7	57	1	0		0	0	0	28.08	11	2.1	4.2	10	13	668	79	2	1	14
15	75	50	63	-8	53	2	0	2	0	0	0	28.03	07	1.9	4.0	9	12	505	56	6	7	15
16	68	55	61*	-10	56	4	0	1	0	.23	0	27.65	33	9.3	9.8	16	32	17	2	10	10	16
17	79	55	67	-4	58	0	2	1 8	0	.16	0	27.74	34	13.7	14.2	21	32	350	41	9	6	17
18	69*	63	76*	5	65	0	11	1 3 8	0	0	0	27.87	35	6.5	7.5	15	01	592	86	5	3	18
19	86	62	74	3	67	0	9	1 3 8	0	T	0	27.95	32	4.1	4.6	15	32	450	51	7	6	19
20	70	64	67	-5	82	0	2	1 8	0	T	0	28.07	14	5.6	6.8	12	18	0	0	10	10	20
21	76	81	70	-2	63	0	5		0	0	0	27.98	14	3.2	6.3	14	17	51	8	10	10	21
22	87	82	75	3	65	0	10	2 8	0	0	0	27.69	32	6.3	7.1	18	32	650	74	8	8	22
23	85	61	73	1	66	0	8	1	0	.20	0	27.66	31	4.5	4.6	12	31	523	60	7	8	23
24	81	84	73	1	88	0	8	1	0	T	0	27.82	32	6.3	6.3	15	32	302	35	9	9	24
25	72	54	63	-9	60	2	0	2	0	.01	0	27.95	31	4.0	5.5	15	32	302	35	8	7	25
26	73	50	62	-10	54	3	0	2	0	0	0	28.06	13	2.5	3.3	10	17	615	70	4	4	26
27	78	47	63	-9	57	2	0	1	0	0	0	28.05	12	1.9	4.2	8	12	715	62	3	2	27
28	63	53	68	-4	59	0	3	2 8	0	0	0	27.95	33	2.4	2.8	10	31	609	70	5	4	28
29	75	55	65	-8	62	0	0	1 8	0	T	0	27.83	17	2.3	3.0	8	18	472	54	9	8	29
30	85	58	72	-1	61	0	7	1 3	0	.22	0	27.87	32	2.8	8.4	17	18	743	85	6	5	30
	SUM	SUM				TOTAL	TOTAL			TOTAL	TOTAL		FOR THE MONTH:					TOTAL	%	SUM	SUM	
	2386	1744				18	141			2.20	0	27.86	33	2.2	6.5	30	33	13982	FOR	194	187	
	AVG.	AVG.	AVG.	DEP.	AVG.	DEP.	DEP.			DEP.						DATE:	11	POSSIBLE	MONTH	AVG.	AVG.	
	79.5	58.1	68.8	-1.8	62	4	-41			-1.77								26152	53	6.5	6.2	

SEASON TO DATE	TOTAL	TOTAL
	4001	197
	DEP.	DEP.
	-236	-51

NUMBER OF DAYS	
MAXIMUM TEMP. ≥ 90°	0
MAXIMUM TEMP. ≤ 32°	0
MINIMUM TEMP. ≤ 32°	0
MINIMUM TEMP. ≤ 0°	0

NUMBER OF DAYS	
PRECIPITATION ≥ .01 INCH	12
SNOW, ICE PELLETS ≥ 1.0 INCH	0
THUNDERSTORMS	8
HEAVY FOG	8
CLEAR 5	PARTLY CLOUDY 10 CLOUDY 15

GREATEST IN 24 HOURS AND DATES		
PRECIPITATION	SNOW, ICE PELLETS	GREATEST DEPTH ON GROUND OF SNOW, ICE PELLETS OR ICE AND DATE
.98 7- 8	0	0

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
T TRACE AMOUNT
+ ALSO ON AN EARLIER DATE, OR DATES.
HEAVY FOG: - VISIBILITY 1/4 MILE OR LESS.
FIGURES FOR WIND DIRECTIONS ARE TENS OF DEGREES CLOCKWISE FROM TRUE NORTH. 00 = CALM.
DATA IN COLS. 6 AND 12-15 ARE BASED ON 7 OR MORE OBSERVATIONS PER DAY AT 3-HOUR INTERVALS.
FASTEST MILE WIND SPEEDS ARE FASTEST OBSERVED ONE-MINUTE VALUES WHEN DIRECTIONS ARE IN TENS OF DEGREES. THE / WITH THE DIRECTION INDICATES PEAK GUST SPEED.
ANY ERRORS DETECTED WILL BE CORRECTED AND CHANGES IN SUMMARY DATA WILL BE ANNOTATED IN THE ANNUAL SUMMARY

SUMMARY BY HOURS

HOUR LOCAL TIME	AVERAGES SKY COVER TENTHS	STATION PRESSURE IN.	TEMPERATURE AIR °F	WET BULB °F	DEW PT. °F	RELATIVE HUMIDITY %	WIND SPEED M.P.H.	RESULTANT WIND DIRECTION	SPEED M.P.H.
01	6	27.88	82	61	61	96	4.6	33	1.9
04	6	27.87	60	60	59	97	4.0	33	2.3
07	7	27.90	61	60	60	97	4.8	35	2.5
10	7	27.90	70	66	63	78	8.3	31	2.9
13	7	27.68	75	67	63	67	6.9	34	3.5
16	6	27.85	77	68	63	65	9.5	32	2.0
18	6	27.85	72	66	63	73	7.6	35	1.2
22	5	27.88	65	64	62	91	4.6	33	2.0

HOURLY PRECIPITATION (WATER EQUIVALENT IN INCHES)

DATE	A. M. HOUR ENDING AT 1	2	3	4	5	6	7	8	9	10	11	12	P. M. HOUR ENDING AT 1	2	3	4	5	6	7	8	9	10	11	12	DATE
1		.07																							1
2																	T	.04	T		T				2
3			.01	.05	.01	T	T	.04	T	T	T			T	T			.01	T						3
4																									4
5																									5
6																									6
7																	T				.22	.48	.05	.21	7
8	.02													T											8
9																.05	.01	.04							9
10																				T	T				10
11	.05	.02																							11
12																									12
13																									13
14																									14
15																									15
16						T	T						T	T	.05	.05	.02	T	T	T	.02	.03	.03	.03	16
17	.03	.04	.01	.03	.05	T	T	T																	17
18																									18
19						T					T														19
20		T	T		T																				20
21																									21
22																									22
23														T	T	T	T	.17	.01	T	.02				23
24											T	T						T	T		T				24
25					T	.01	T																		25
26																									26
27																									27
28																									28
29													T	T			T	T							29
30				T	.07	.13	.02																		30

SUBSCRIPTION PRICE: $3.30 PER YEAR INCLUDING ANNUAL SUMMARY. FOREIGN MAILING $1.95 EXTRA. SINGLE COPY: 25 CENTS FOR MONTHLY ISSUE. 30 CENTS FOR ANNUAL ISSUE. THERE IS A MINIMUM CHARGE OF $3.00 FOR EACH ORDER OF SHELF-STOCKED ISSUES OF PUBLICATIONS. MAKE CHECKS PAYABLE TO DEPARTMENT OF COMMERCE, NOAA. SEND PAYMENTS, ORDERS, AND INQUIRIES TO NATIONAL CLIMATIC CENTER, FEDERAL BUILDING, ASHEVILLE, NORTH CAROLINA 28801.

I CERTIFY THAT THIS IS AN OFFICIAL PUBLICATION OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, AND IS COMPILED FROM RECORDS ON FILE AT THE NATIONAL CLIMATIC CENTER, ASHEVILLE, NORTH CAROLINA 28801.

noaa NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION / ENVIRONMENTAL DATA AND INFORMATION SERVICE

Daniel B. Mitchell
DIRECTOR, NATIONAL CLIMATIC CENTER

JUNE 1979 ASHEVILLE, NORTH CAROLINA

EXHIBIT 44

OBSERVATIONS AT 3-HOUR INTERVALS

HOUR	SKY COVER TENTHS	CEILING HNDS.OF FT.	VISIBILITY WHOLE MILES	VISIBILITY 16THS MILE	WEATHER	TEMPERATURE AIR °F	TEMPERATURE WET BULB °F	TEMPERATURE DEW PT. °F	REL. HUM. %	WIND DIR	WIND SPEED KNOTS
DAY 01											
01	10	75	10			67	67	67	100	11	4
04	10	12	2		F	67	67	67	100	00	0
07	8	2	0	8	F	65	65	65	100	01	8
10	8	UNL	10			74	70	68	82	34	10
13	10	55	15			75	70	67	76	35	8
16	10	UNL	15			83	73	68	61	36	9
19	4	UNL	15			76	69	65	69	35	9
22	0	UNL	8			66	65	65	87	32	5
DAY 02											
01	0	UNL	4		F	63	63	63	100	35	5
04	0	UNL	2		F	61	61	61	100	33	4
07	5	UNL	2		F	65	64	64	87	33	3
10	1	UNL	5		H	77	71	68	76	30	7
13	7	270	6		H	83	73	68	63	21	5
16	9	80	6		H	80	72	68	67	30	7
19	8	80	6		H	68	68	67	83	25	3
22	10	70	2		F	68	68	68	100	00	0
DAY 03											
01	10	3	0	8	F	67	67	67	100	12	3
04	10	30	2		RWF	66	66	66	100	16	5
07	10	100	5		AF	67	67	67	100	06	4
10	10	100	2		RF	67	67	67	100	15	3
13	10	80	8			75	72	70	85	00	0
16	10	55	12			73	70	69	87	20	7
19	9	48	15			70	69	69	87	34	7
22	8	250	10			67	66	66	97	35	6
DAY 04											
01	10	37	10			65	64	63	83	34	10
04	1	UNL	10			62	61	60	93	34	7
07	6	16	10			63	62	62	97	34	10
10	7	30	12			70	64	61	73	34	11
13	4	UNL	12			75	67	62	64	34	12
16	0	UNL	12			80	67	60	51	32	6
19	4	UNL	12			74	66	61	64	34	8
22	6	65	10			64	61	60	87	32	4
DAY 05											
01	10	60	10			61	60	60	87	21	3
04	10	27	7			61	60	60	87	21	5
07	6	43	5		F	62	62	62	100	14	3
10	7	20	8			71	67	65	81	20	8
13	4	UNL	15			77	68	63	62	17	6
16	2	UNL	12			78	68	64	60	22	10
19	7	UNL	10			74	67	63	69	17	8
22	6	UNL	10			66	64	63	80	13	4
DAY 06											
01	10	UNL	10			62	61	61	87	00	0
04	8	UNL	3		F	59	59	59	100	00	0
07	9	270	3		F	60	60	60	100	00	0
10	10	140	3		F	67	66	65	83	16	3
13	7	250	7			75	68	66	74	15	6
16	1	UNL	10			80	68	62	54	18	10
19	0	UNL	7			74	67	63	68	20	8
22	0	UNL	7			64	63	62	83	00	0
DAY 07											
01	9	110	2		F	65	65	65	100	20	5
04	10	3	1		F	63	63	63	100	00	0
07	7	30	2		F	63	63	63	100	14	4
10	8	60	4		H	73	70	68	84	17	4
13	10	26	5		H	77	73	71	82	13	8
16	10	43	5		H	77	73	72	85	13	10
19	8	30	3		H	75	72	71	87	11	8
22	10	80	1		TRWFH	71	70	70	.87	18	5
DAY 08											
01	10	80	2		F	70	70	70	100	12	3
04	10	18	2		F	67	67	67	100	00	0
07	10	17	3		F	69	69	69	100	12	5
10	10	28	7			71	70	68	83	17	5
13	8	35	10			77	73	72	85	11	8
16	8	90	10			80	74	72	77	15	7
19	8	270	10			74	71	68	84	12	6
22	8	39	10			70	69	68	87	20	3
DAY 09											
01	7	45	3		F	67	67	67	100	00	0
04	10	1	0	2	F	66	66	66	100	00	0
07	10	2	0	12	F	66	66	66	100	00	0
10	1	UNL	5		H	77	73	71	82	18	4
13	8	UNL	10			81	73	70	69	18	7
16	10	35	7		RW	77	74	73	88	17	8
19	10	130	5		F	72	71	70	93	11	5
22	10	25	4		F	71	70	70	97	33	5
DAY 10											
01	10	2	1		F	70	70	70	100	00	0
04	10	4	1		F	68	69	69	100	32	3
07	8	150	1		F	70	68	69	97	33	5
10	8	80	3		H	77	73	72	85	32	8
13	8	90	5		H	81	75	73	77	33	8
16	10	80	4		H	78	74	73	85	22	8
19	7	60	4		H	75	73	72	90	18	6
22	10	65	4		F	72	71	71	87	17	5
DAY 11											
01	10	27	5		RW	70	69	68	87	34	15
04	10	250	10			59	57	56	80	32	16
07	4	UNL	30			57	53	50	78	34	20
10	1	UNL	30			63	56	51	65	33	23
13	0	UNL	30			68	60	53	57	33	23
16	0	UNL	35			72	60	51	48	32	18
19	0	UNL	35			69	57	48	47	33	18
22	0	UNL	35			59	53	48	67	36	3
DAY 12											
01	0	UNL	25			54	51	48	83	32	5
04	0	UNL	15			47	47	47	100	00	0
07	0	UNL	15			52	51	51	96	14	4
10	0	UNL	25			70	61	55	58	36	13
13	0	UNL	25			74	61	52	46	32	19
16	0	UNL	30			77	63	54	45	32	15
19	0	UNL	30			73	62	54	51	34	7
22	0	UNL	30			60	58	56	87	00	0
DAY 13											
01	0	UNL	15			53	52	52	86	31	4
04	0	UNL	10			50	50	50	100	00	0
07	0	UNL	12			54	54	54	100	00	0
10	0	UNL	12			68	62	58	68	29	3
13	1	UNL	20			74	63	57	55	16	6
16	1	UNL	25			79	65	57	47	14	7
18	1	UNL	25			73	62	55	53	12	5
22	0	UNL	15			61	59	57	87	11	3
DAY 14											
01	0	UNL	15			56	55	55	86	00	0
04	0	UNL	15			52	51	51	86	00	0
07	0	UNL	12			55	54	54	86	00	0
10	0	UNL	12			70	63	58	68	32	6
13	1	UNL	12			74	64	58	58	12	5
16	3	UNL	10			76	65	58	56	13	9
19	0	UNL	10			70	63	58	66	13	5
22	0	UNL	10			63	60	58	84	04	4
DAY 15											
01	0	UNL	10			57	56	56	86	00	0
04	0	UNL	5		F	53	53	53	100	00	0
07	5	UNL	2		F	53	53	53	100	16	3
10	7	270	8			68	60	54	61	35	4
13	7	270	20			75	61	51	43	02	5
16	10	250	25			73	60	50	44	10	7
18	10	250	25			66	58	53	63	13	5
22	10	130	15			61	58	56	84	35	4
DAY 16											
01	10	120	12			60	56	54	81	29	3
04	10	100	10			58	56	54	87	32	4
07	10	110	15			58	57	56	83	34	5
10	10	120	12			66	60	56	70	35	8
13	10	110	8		R	65	60	56	73	33	6
16	10	22	5		RF	61	61	61	100	35	11
18	10	45	12		R	58	57	56	90	32	16
22	10	50	10		R	56	55	54	93	32	14
DAY 17											
01	10	45	8		R	55	54	54	86	32	18
04	10	33	8		R	56	55	55	86	34	10
07	10	60	10		R	57	55	54	90	34	16
10	10	55	15			63	59	56	78	32	12
13	10	55	8			71	65	62	73	01	16
16	7	50	4		H	78	68	63	60	34	13
18	10	250	6		H	73	65	61	66	34	6
22	5	UNL	4		H	63	62	61	93	34	8
DAY 18											
01	0	UNL	4		F	63	62	62	87	09	4
04	0	UNL	4		F	65	62	61	87	35	10
07	7	UNL	5		FW	66	66	66	100	30	5
10	4	UNL	6		H	78	71	67	68	35	6
13	5	UNL	6		H	86	74	68	55	36	8
16	4	UNL	6		H	85	72	66	53	36	8
19	3	UNL	7			82	72	67	61	35	7
22	2	UNL	6		H	71	68	66	84	32	3
DAY 19											
01	0	UNL	2		F	65	64	64	97	24	3
04	0	UNL	2		F	64	63	63	87	00	0
07	3	UNL	5		F	67	66	66	87	00	0
10	7	100	6		H	79	73	70	74	35	6
13	8	270	7			83	72	67	58	33	10
16	9	UNL	10			83	73	68	61	32	9
18	8	70	10			79	71	67	67	31	4
22	9	55	10			71	70	69	93	00	0
DAY 20											
01	10	30	7			70	66	64	81	22	3
04	10	14	3		F	68	67	66	93	10	6
07	10	17	5		F	65	63	62	90	08	6
10	10	20	5		H	67	64	62	84	18	7
13	10	18	5		H	68	65	63	81	16	7
16	10	28	6		H	70	65	62	76	12	6
18	10	24	7			66	63	61	84	12	8
22	10	29	7			66	62	59	78	14	5
DAY 21											
01	10	25	10			64	61	58	84	14	4
04	10	28	10			63	61	58	87	13	5
07	10	30	10			64	61	60	87	13	5
10	10	22	10			68	64	61	78	17	8
13	10	75	10			74	68	65	74	16	6
16	10	55	8			72	67	65	78	36	7
18	8	130	10			71	68	66	84	26	4
22	7	130	7			66	65	65	97	09	5
DAY 22											
01	7	130	4		F	64	64	64	100	00	0
04	10	2	0	1	F	64	64	64	100	33	8
07	10	1	1		F	63	63	63	100	00	0
10	8	UNL	6		H	75	70	67	76	34	6
13	7	UNL	8			81	70	66	60	33	10
16	3	UNL	12			87	70	62	43	33	7
18	9	UNL	12			78	71	67	68	24	5
22	10	250	10			68	65	64	84	32	13
DAY 23											
01	10	130	8			64	63	63	97	29	4
04	10	120	8			62	62	62	100	00	0
07	8	UNL	8			65	65	65	100	31	4
10	5	UNL	15			76	69	65	69	32	6
13	5	UNL	15			84	71	65	53	31	5
16	7	250	10		RW	81	74	71	72	30	7
18	10	45	6		RW	72	68	68	87	32	6
22	10	130	4		F	68	69	69	100	00	0
DAY 24											
01	4	UNL	0	12	F	65	65	65	100	30	3
04	6	80	3		F	66	66	66	100	33	11
07	10	100	3		F	67	67	67	100	33	4
10	10	90	4		F	70	69	68	97	31	4
13	10	55	10			72	70	68	80	32	5
16	8	80	12			78	71	68	68	32	8
18	9	60	10			72	71	71	97	00	0
22	10	43	10			67	67	67	100	32	8
DAY 25											
01	10	60	10			63	63	63	100	32	13
04	10	6	4		RF	60	60	60	100	32	8
07	10	5	4		F	60	60	60	100	33	5
10	10	16	7			61	60	58	83	32	4
13	10	16	10			62	60	59	90	25	4
16	6	23	10			67	63	61	81	00	0
19	0	UNL	12			67	62	58	76	15	4
22	1	UNL	10			58	58	58	100	00	0
DAY 26											
01	10	2	0	4	F	53	53	53	100	00	0
04	7	2	0	8	F	50	50	50	100	00	0
07	5	UNL	0	8	F	51	51	51	100	00	0
10	7	33	15			63	59	57	81	17	7
13	6	39	25			66	59	55	68	04	4
16	3	UNL	25			72	62	55	55	12	5
19	0	UNL	25			70	62	57	64	13	7
22	0	UNL	20			58	57	56	93	00	0
DAY 27											
01	0	UNL	10			53	53	53	100	11	3
04	0	UNL	8			50	50	50	100	00	0
07	0	UNL	7			53	53	53	100	34	3
10	2	UNL	15			65	60	57	75	18	6
13	3	UNL	15			75	64	58	56	36	4
16	5	UNL	15			77	67	62	60	11	6
19	3	UNL	12			72	66	62	71	13	4
22	0	UNL	10			63	62	61	93	11	3
DAY 28											
01	0	UNL	7			58	58	58	100	00	0
04	0	UNL	3		F	55	55	55	100	00	0
07	10	2	0	2	F	55	55	55	100	00	0
10	10	UNL	5		H	71	66	63	76	03	4
13	1	UNL	7			78	66	60	54	34	6
16	1	UNL	7			82	66	58	43	31	7
19	0	UNL	7			78	65	58	50	29	3
22	1	UNL	7			65	63	62	90	00	0
DAY 29											
01	2	UNL	7			61	60	60	97	00	0
04	6	UNL	3		F	58	58	58	100	00	0
07	5	UNL	2		F	58	58	58	100	00	0
10	10	250	7			71	65	62	73	20	4
13	10	250	7			73	67	63	71	12	3
16	10	90	7			73	67	64	74	18	7
19	10	90	7			71	67	65	81	13	4
22	10	100	8			68	65	63	84	25	3
DAY 30											
01	8	250	5		F	62	62	62	100	10	6
04	10	60	3		RWF	60	60	60	100	16	3
07	10	120	15			61	61	61	100	30	3
10	7	UNL	20			70	65	63	79	18	15
13	5	UNL	20			80	66	57	45	31	12
16	4	UNL	20			80	69	63	56	34	10
19	1	UNL	20			75	66	61	62	35	11
22	0	UNL	10			65	61	59	81	33	5

STATION

ASHEVILLE N C

YEAR & MONTH

78 06

NOTES

CEILING

UNL INDICATES UNLIMITED

WEATHER

- TORNADO
T THUNDERSTORM
Q SQUALL
R RAIN
RW RAIN SHOWERS
ZR FREEZING RAIN
L DRIZZLE
ZL FREEZING DRIZZLE
S SNOW
SP SNOW PELLETS
IC ICE CRYSTALS
SW SNOW SHOWERS
SG SNOW GRAINS
IP ICE PELLETS
A HAIL
F FOG
IF ICE FOG
GF GROUND FOG
BD BLOWING DUST
BN BLOWING SAND
BS BLOWING SNOW
BY BLOWING SPRAY
K SMOKE
H HAZE
D DUST

WIND

DIRECTIONS ARE THOSE FROM WHICH THE WIND BLOWS. INDICATED IN TENS OF DEGREES FROM TRUE NORTH: I.E., 09 FOR EAST, 18 FOR SOUTH, 27 FOR WEST. ENTRY OF 00 IN THE DIRECTION COLUMN INDICATES CALM.

SPEED IS EXPRESSED IN KNOTS: MULTIPLY BY 1.15 TO CONVERT TO MILES PER HOUR.

EXHIBIT 45

Meteorological Data For The Current Year

Station: ASHEVILLE, NORTH CAROLINA # 03812 — ASHEVILLE AIRPORT — Standard time used: EASTERN — Latitude: 35° 26' N — Longitude: 82° 33' W — Elevation (ground): 2140 feet — Year: 1978

Month	Temperature °F: Averages: Daily maximum	Daily minimum	Monthly	Extremes: Highest	Date	Lowest	Date	Degree days Base 65 °F: Heating	Cooling	Precipitation in inches: Water equivalent: Total	Greatest in 24 hrs.	Date	Snow, Ice pellets: Total	Greatest in 24 hrs.	Date	Relative humidity, pct. (Local time): Hour 01	Hour 07	Hour 13	Hour 19	Wind: Resultant: Direction	Speed m.p.h.	Average speed m.p.h.	Fastest mile: Speed m.p.h.	Direction	Date	Percent of possible sunshine	Average sky cover, tenths, sunrise to sunset	Number of days: Sunrise to sunset: Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Ice pellets 1.0 inch or more	Thunderstorms	Heavy fog, visibility ¼ mile or less	Temperature °F: Maximum (b) 90° and above	32° and below	Minimum 32° and below	0° and below	Average station pressure mb Elev. 2170 feet m.s.l.
JAN	39.1	19.4	29.3	56	8	3	10	1101	0	7.47	2.95	24-25	9.7	3.0	19-20	82	87	65	73	34	6.1	11.1	32	34	9	47	6.1	11	[illegible]	15	13	4	1	8	0	6	28	0	940.1
FEB	44.2	22.5	33.4	68	25	6	7	878	0	0.44	0.18	13	5.3	3.7	21	74	83	56	62	33	5.0	9.6	31	33	22	56	6.0	6	11	11	5	1	0	2	0	2	25	0	939.7
MAR	58.9	32.8	45.9	78	31	14	5	586	0	5.22	1.77	9-10	5.3	4.2	2-3	82	87	51	60	33	2.7	9.5	31	35	10	61	5.8	10	7	14	15	1	3	2	0	2	12	0	940.1
NOV	63.8	39.7	51.8	78	5	31	5	390	0	2.49	1.31	17	0.0	0.0		91	95	61	72	32	0.7	6.8	23	35	28	50	6.1	8	10	12	6	0	0	4	0	0	3	0	944.1
DEC	53.4	28.5	41.0	69	8	14	15	741	0	4.32	1.45	3-4	T	T	9	83	89	59	69	33	2.4	8.5	36	34	9	56	4.8	13	7	11	10	0	0	3	0	0	24	0	942.4
YEAR	67.2	43.5	55.4	94	JUN 28	3	JAN 10	4371	973	40.26	3.19	AUG 6-7	20.3	4.2	MAR 2-3	88	92	59	70	33	2.1	7.4	36	34	DEC 9	59	5.6	112	126	127	111	6	42	85	10	10	97	0	942.0

Normals, Means, And Extremes

Month	Temperatures °F: Normal: Daily maximum	Daily minimum	Monthly	Extremes: Record highest	Year	Record lowest	Year	Normal Degree days Base 85 °F: Heating	Cooling	Precipitation in Inches: Water equivalent: Normal	Maximum monthly	Year	Minimum monthly	Year	Maximum in 24 hrs.	Year	Snow, Ice pellets: Maximum monthly	Year	Maximum in 24 hrs.	Year	Relative humidity pct. (Local time): Hour 01	Hour 07	Hour 13	Hour 19	Wind: Mean speed m.p.h.	Prevailing direction	Fastest mile: Speed m.p.h.	Direction	Year	Pct. of possible sunshine	Mean sky cover, tenths, sunrise to sunset	Mean number of days: Sunrise to sunset: Clear	Partly cloudy	Cloudy	Precipitation .01 inch or more	Snow, Ice pellets 1.0 inch or more	Thunderstorms	Heavy fog, visibility ¼ mile or less	Temperatures °F: Max. (b) 90° and above	32° and below	Min. 32° and below	0° and below	Average station pressure mb. Elev. 2170 feet m.s.l.
(a)				14		14					14		14		14		14		14		14	14	14	14	14		14	14		14	14	14	14	14	14	14	14	14	14	14	14	14	6
J	48.4	27.3	37.9	78	1975	-7	1966	840	0	3.39	7.47	1978	1.75	1970	2.95	1978	17.6	1966	7.6	1966	81	86	61	70	9.7		40	34	1975	56	6.1	10	7	14	11	1	1	4	0	4	24	1	941.4
F	50.0	28.2	39.4	77	1977	-2	1967	717	0	3.60	6.56	1966	0.44	1978	3.17	1966	25.5	1969	11.7	1969	77	82	55	62	9.9		60	34	1972	63	5.6	10	6	12	9	1	1	3	0	2	22	*	940.6
M	58.3	33.5	45.9	82	1974	14	1978	592	0	4.66	9.86	1975	2.59	1966	5.13	1968	13.0	1969	10.9	1969	80	85	53	61	9.6		46	35	1969	65	6.0	9	8	14	12	1	3	2	0	*	14	0	940.4
A	69.9	42.4	55.9	89	1972	24	1973	279	6	3.53	5.71	1973	0.25	1976	3.06	1973	0.2	1971	0.2	1971	79	86	50	56	9.0		44	22	1970	69	5.6	10	9	11	9	0	3	3	0	0	4	0	941.2
M	76.8	50.6	63.7	91	1969	29	1971	100	60	3.31	8.83	1973	1.72	1970	4.95	1973	0.0		0.0		90	92	58	67	7.2		40	34	1971	62	6.2	8	9	14	12	0	7	6	*	0	*	0	940.2
J	82.5	58.7	70.6	96	1969	35	1966	14	182	3.97	6.54	1972	2.12	1975	3.54	1972	0.0		0.0		94	95	60	71	6.2		40	36	1977	66	6.2	6	12	12	12	0	8	8	2	0	0	0	942.4
J	84.3	62.6	73.5	95	1970	46	1967	0	264	4.87	7.53	1969	0.63	1978	4.02	1969	0.0		0.0		96	96	64	75	5.9		43	35	1966	59	6.6	4	14	13	13	0	10	11	3	0	0	0	943.3
A	83.0	61.8	72.8	94	1968	43	1968	0	244	4.50	11.28	1967	1.88	1972	4.12	1967	0.0		0.0		97	98	64	79	5.5		40	34	1973	55	6.4	5	13	13	13	0	10	16	1	0	0	0	944.7
S	78.0	55.4	66.7	92	1975	30	1967	50	101	3.57	9.12	1977	1.17	1970	3.41	1975	0.0		0.0		97	98	65	83	5.7		25	34	1976	56	6.4	6	11	13	10	0	4	13	*	0	*	0	943.4
O	69.1	44.5	56.8	84	1971	21	1976	269	15	3.25	7.05	1971	0.30	1978	2.95	1977	T	1977	T	1977	92	95	58	76	7.0		35	33	1972	63	5.0	13	8	10	8	0	1	8	0	0	5	0	944.0
N	58.2	34.3	46.3	81	1974	8	1970	561	0	2.94	6.88	1977	1.30	1965	4.03	1977	9.6	1968	5.7	1968	86	89	57	71	6.4		40	32	1974	61	5.4	11	7	12	9	*	1	4	0	*	14	0	943.2
D	49.3	28.1	38.7	78	1971	5	1977	815	0	3.59	8.48	1973	0.16	1965	2.66	1973	16.3	1971	16.3	1971	83	86	60	72	9.0		44	34	1965	57	5.9	11	6	14	10	1	1	5	0	1	21	0	941.3
YR	67.4	44.0	55.7	96	JUN 1969	-7	JAN 1966	4237	272	45.18	11.28	AUG 1967	0.16	DEC 1965	5.13	MAR 1968	25.5	FEB 1969	16.3	DEC 1971	88	91	59	70	7.7		60	34	FEB 1972	61	5.9	103	110	152	126	5	49	84	6	7	104	1	942.2

Means and extremes above are from existing and comparable exposures. Annual extremes have been exceeded at other sites in the locality as follows: Highest temperature 99 in July 1936; maximum monthly precipitation 13.75 in August 1940; minimum monthly precipitation T in October 1963; maximum precipitation in 24 hours 7.92 in October 1918; maximum monthly snowfall 28.9 in March 1960.

(a) Length of record, years, through the current year unless otherwise noted, based on January data.
(b) 70° and above at Alaskan stations.
* Less than one half.
T Trace.

NORMALS - Based on record for the 1941-1970 period.
DATE OF AN EXTREME - The most recent in cases of multiple occurrence.
PREVAILING WIND DIRECTION - Record through 1963.
WIND DIRECTION - Numerals indicate tens of degrees clockwise from true north. 00 indicates calm.
FASTEST MILE WIND - Speed is fastest observed 1-minute value when the direction is in tens of degrees.

EXHIBIT 46

EXHIBIT 47

Average Temperature

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
1939	40.2	44.4	49.1	54.1	63.9	74.6	74.3	73.0	69.9	59.6	44.6	40.0	57.3
1940	26.4	38.8	43.4	53.7	62.2	71.6	72.8	72.3	65.2	57.2	46.4	43.6	54.5
1941	38.8	33.8	40.7	58.4	65.6	71.8	74.8	75.1	70.4	63.0	46.9	42.7	56.8
1942	37.4	33.5	47.2	58.5	63.9	73.0	74.6	71.8	67.0	57.5	48.0	38.5	55.9
1943	41.4	40.0	44.6	53.2	65.8	75.6	74.0	75.2	64.1	54.9	44.7	39.2	56.1
1944	39.6	43.4	46.4	54.4	66.8	73.0	72.6	72.0	68.2	56.4	45.1	35.9	56.2
1945	37.0	42.3	57.0	58.4	60.5	71.0	73.9	72.8	69.6	55.5	47.9	33.4	56.6
1976	33.6	45.3	50.6	54.9	59.5	68.1	71.2	70.2	63.1	51.5	41.2	36.2	53.8
1977	24.8	37.4	50.7	58.2	64.6	69.7	75.7	73.8	69.1	54.3	49.3	36.8	55.3
1978	29.3	33.4	45.9	56.8	62.0	71.1	73.4	74.1	70.0	55.7	51.8	41.0	55.4
RECORD MEAN	35.8	38.1	46.8	55.6	62.5	69.1	72.8	72.1	66.6	55.7	46.3	40.1	55.1
MAX	46.6	49.7	59.2	69.0	74.6	80.6	83.4	82.5	77.2	68.1	58.2	50.9	66.7
MIN	25.0	26.4	34.4	42.2	50.3	57.5	62.2	61.7	55.9	43.3	34.4	29.2	43.5

Heating Degree Days

ASHEVILLE, NC

Season	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Total
1958-59	0	0	41	292	449	860	877	635	624	249	58	3	4088
1959-60	0	0	21	204	591	747	800	818	969	226	181	2	4559
1975-76	0	0	77	232	498	812	966	566	439	296	168	33	4087
1976-77	2	3	83	411	706	884	1239	768	437	198	66	25	4822
1977-78	0	0	14	331	466	868	1101	878	586	241	139	0	4624
1978-79	0	0	12	283	390	741							

Cooling Degree Days

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1969	0	0	0	4	85	262	343	196	92	15	0	0	997
1970	0	0	0	22	52	159	296	259	206	17	0	0	1011
1976	0	0	0	0	5	135	198	170	35	2	0	0	545
1977	0	0	0	2	59	173	340	279	146	7	1	0	1007
1978	0	0	0	2	53	188	266	292	168	4	0	0	973

Precipitation

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
1939	3.94	5.72	2.56	2.38	2.78	4.21	3.79	5.14	1.61	0.82	0.77	2.08	35.80
1940	2.13	2.61	2.85	3.26	1.99	3.10	4.03	13.75	0.35	1.12	1.36	2.79	39.34
1976	3.51	2.20	4.96	0.25	8.67	5.51	3.18	4.23	3.50	5.59	1.58	4.05	47.23
1977	2.09	1.02	7.29	4.05	3.96	5.11	1.03	3.68	9.12	3.79	6.88	2.43	50.45
1978	7.47	0.44	5.22	2.97	4.65	2.29	0.63	6.91	2.57	0.30	2.49	4.32	40.26
RECORD MEAN	3.26	3.22	4.99	2.87	5.20	4.06	4.54	5.04	4.12	3.83	3.20	3.82	48.15

Snowfall

Season	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Total
1939-40	0.0	0.0	0.0	0.0	T	4.4	7.7	3.0	3.5	0.2	0.0	0.0	18.8
1975-76	0.0	0.0	0.0	0.0	5.0	0.4	1.6	3.5	T	0.0	0.0	0.0	10.5
1976-77	0.0	0.0	0.0	0.0	0.1	0.3	11.9	0.7	0.0	0.0	0.0	0.0	13.0
1977-78	0.0	0.0	0.0	T	T	1.5	9.7	5.3	5.3	T	0.0	0.0	21.8
1978-79	0.0	0.0	0.0	0.0	0.0	T							
RECORD MEAN	0.0	0.0	0.0	T	1.5	3.2	4.8	5.0	3.3	T	0.0	0.0	17.8

EXHIBIT 48

STATION LOCATION

ASHEVILLE, NORTH CAROLINA

Location	Occupied from	Occupied to	Airline distance and direction from previous location	Latitude North	Longitude West	Elevation above Sea level: Ground at temperature site	Elevation above Ground: Wind instruments	Extreme thermometers	Psychrometer	Telepsychrometer	Tipping bucket rain gage	Weighing rain gage	8" rain gage	Hygrothermometer		Remarks
COOPERATIVE	1857	1902														Smithsonian Institute and Army Signal Corps observers. Records almost continuous, but exact locations and details as to exposure are not available.
CITY																
Drhumor Building Patton Avenue and Church Street	8/22/02	5/22/03		35° 36'	82° 32'	2207	100	75	73		**		62			**- Elevation not on record. Notes indicate same exposure as 8-inch gage.
Library Building South Pack Square	5/22/03	7/01/10	600 ft. ENE	35° 36'	82° 32'	2218	75	55	53		**		46			
Legal Building South Pack Square	7/01/10	1/01/31	60 ft. ENE	35° 36'	82° 32'	2218	84	72	70		61		61			
U. S. Post Office and Court House Building Otis and Post Streets	1/01/31	8/31/64 (X)	2000 ft.WSW	35° 36'	82° 32'	2203	b92	78	77		b75	a75	75			a - 77 feet to 9/1/52. b - Removed 9/1/64. (X)- Office moved to Airport. Climatological observations continued at City site through May 1967.
COOPERATIVE																
Federal Building	6/01/67	Present	500 ft. NE	35° 36'	82° 32'	2242		110				108	108			Elevations above ground are approximate values with reference to point opposite shelter on west side of building.
AIRPORT																
Administration Building Asheville Airport	9/01/64	Present	12 mi. S of Post Office	35° 26'	d82° 33'	2140	20	e3	c3			4	3	4		c - Stand-by equipment. d - Resurvey effective 6/20/75. e - Stand-by equipment 12/15/77.

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
ENVIRONMENTAL DATA AND INFORMATION SERVICE

(Stations for which Local Climatological Data are issued, as of January 1, 1979)

ALABAMA

abc BIRMINGHAM AIRPORT
ac BIRMINGHAM CITY OFFICE
abc HUNTSVILLE
abc MOBILE
abc MONTGOMERY

ALASKA

abc ANCHORAGE
abc ANNETTE
abc BARROW
abc BARTER ISLAND
abc BETHEL
abc BETTLES
abc BIG DELTA
abc COLD BAY
abc FAIRBANKS
abc GULKANA
abc HOMER
abc JUNEAU
abc KING SALMON
abc KODIAK
abc KOTZEBUE
abc McGRATH
abc NOME
abc ST. PAUL ISLAND
abc TALKEETNA
abc UNALAKLEET
abc VALDEZ
abc YAKUTAT

ARIZONA

abc FLAGSTAFF
abc PHOENIX
abc TUCSON
abc WINSLOW
abc YUMA

ARKANSAS

abc FORT SMITH
abc LITTLE ROCK
ac NO LITTLE ROCK

CALIFORNIA

abc BAKERSFIELD
abc BISHOP
abc BLUE CANYON
ac EUREKA
abc FRESNO
abc LONG BEACH
abc LOS ANGELES AIRPORT
ac LOS ANGELES CIVIC CENTER
abc MT. SHASTA
abc OAKLAND
abc RED BLUFF
abc SACRAMENTO
abc SANDBERG—(1)
abc SAN DIEGO
abc SAN FRANCISCO AIRPORT
ac SAN FRANCISCO CITY
abc SANTA MARIA
abc STOCKTON

COLORADO

abc ALAMOSA
abc COLORADO SPRINGS
abc DENVER
abc GRAND JUNCTION
abc PUEBLO

CONNECTICUT

abc BRIDGEPORT
abc HARTFORD

DELAWARE

abc WILMINGTON

DISTRICT OF COLUMBIA

abc WASHINGTON - NATIONAL AP
abc WASHINGTON - DULLES INT'L AP

FLORIDA

abc APALACHICOLA
abc DAYTONA BEACH
abc FORT MYERS
abc JACKSONVILLE
abc KEY WEST
ac LAKELAND — (2)
abc MIAMI
abc ORLANDO
abc PENSACOLA
abc TALLAHASSEE
abc TAMPA
abc WEST PALM BEACH

GEORGIA

abc ATHENS
abc ATLANTA
abc AUGUSTA
abc COLUMBUS
abc MACON
abc ROME
abc SAVANNAH

HAWAII

abc HILO
abc HONOLULU
abc KAHULUI
abc LIHUE

IDAHO

abc BOISE
abc LEWISTON
abc POCATELLO

ILLINOIS

ac CAIRO
abc CHICAGO MIDWAY AIRPORT
abc CHICAGO O'HARE AIRPORT
abc MOLINE
abc PEORIA
abc ROCKFORD
abc SPRINGFIELD

INDIANA

abc EVANSVILLE
abc FORT WAYNE
abc INDIANAPOLIS
abc SOUTH BEND

IOWA

abc BURLINGTON
abc DES MOINES
abc DUBUQUE
abc SIOUX CITY
abc WATERLOO

KANSAS

abc CONCORDIA
abc DODGE CITY
abc GOODLAND
abc TOPEKA
abc WICHITA

KENTUCKY

abc LEXINGTON
abc LOUISVILLE

LOUISIANA

abc BATON ROUGE
abc LAKE CHARLES
abc NEW ORLEANS
abc SHREVEPORT

MAINE

abc CARIBOU
abc PORTLAND

MARYLAND

abc BALTIMORE

MASSACHUSETTS

abc BOSTON
ac BLUE HILL OBS.
abc WORCESTER

MICHIGAN

abc ALPENA
abc DETROIT CITY AIRPORT
abc DETROIT METRO AP
abc FLINT
abc GRAND RAPIDS
abc HOUGHTON LAKE
abc LANSING
ac MARQUETTE
abc MUSKEGON
abc SAULT STE. MARIE

MINNESOTA

abc DULUTH
abc INTERNATIONAL FALLS
abc MINNEAPOLIS - ST. PAUL
abc ROCHESTER
abc ST. CLOUD

MISSISSIPPI

abc JACKSON
abc MERIDIAN

MISSOURI

abc COLUMBIA
abc KANSAS CITY INT'L AP
abc KANSAS CITY DOWNTOWN AP
abc ST. JOSEPH
abc ST. LOUIS
abc SPRINGFIELD

MONTANA

abc BILLINGS
abc GLASGOW
abc GREAT FALLS
abc HAVRE
abc HELENA
abc KALISPELL
abc MILES CITY
abc MISSOULA

NEBRASKA

abc GRAND ISLAND
abc LINCOLN
abc NORFOLK
abc NORTH PLATTE
abc OMAHA
ac OMAHA (NORTH)
abc SCOTTSBLUFF
ac VALENTINE

NEVADA

abc ELKO
abc ELY
abc LAS VEGAS
abc RENO
abc WINNEMUCCA

NEW HAMPSHIRE

abc CONCORD
ac MT. WASHINGTON

NEW JERSEY

abc ATLANTIC CITY AIRPORT
a ATLANTIC CITY STATE MARINA
abc NEWARK
ac TRENTON

NEW MEXICO

abc ALBUQUERQUE
abc CLAYTON
abc ROSWELL

NEW YORK

abc ALBANY
abc BINGHAMTON
abc BUFFALO
abc NEW YORK CENTRAL PARK
abc N.Y. J.F. KENNEDY INT'L AIRPORT
abc N.Y. LaGUARDIA FIELD
abc ROCHESTER
abc SYRACUSE

NORTH CAROLINA

abc ASHEVILLE
abc CAPE HATTERAS
abc CHARLOTTE
abc GREENSBORO
abc RALEIGH
abc WILMINGTON

NORTH DAKOTA

abc BISMARCK
abc FARGO
abc WILLISTON

OHIO

abc AKRON-CANTON
ac CINCINNATI ABBE OBS.
abc CINCINNATI AIRPORT
abc CLEVELAND
abc COLUMBUS
abc DAYTON
abc MANSFIELD
abc TOLEDO
abc YOUNGSTOWN

OKLAHOMA

abc OKLAHOMA CITY
abc TULSA

OREGON

abc ASTORIA
abc BURNS
abc EUGENE
abc MEDFORD
abc PENDLETON
abc PORTLAND
abc SALEM
abc SEXTON SUMMIT

PACIFIC ISLANDS

abc GUAM
abc JOHNSTON
abc KOROR
abc KWAJALEIN
abc MAJURO
abc PAGO PAGO
abc PONAPE
abc TRUK (MOEN)
abc WAKE
abc YAP

PENNSYLVANIA

abc ALLENTOWN
abc AVOCA, WILKES-BARRE-SCRANTON AP
abc ERIE
abc HARRISBURG
abc PHILADELPHIA
abc PITTSBURGH AIRPORT
ac PITTSBURGH CITY
abc WILLIAMSPORT

RHODE ISLAND

ac BLOCK ISLAND
abc PROVIDENCE

SOUTH CAROLINA

abc CHARLESTON AIRPORT
a CHARLESTON CITY
abc COLUMBIA
abc GREENVILLE-SPARTANBURG

SOUTH DAKOTA

abc ABERDEEN
abc HURON
abc RAPID CITY
abc SIOUX FALLS

TENNESSEE

abc BRISTOL
abc CHATTANOOGA
abc KNOXVILLE
abc MEMPHIS
abc NASHVILLE
ac OAK RIDGE

TEXAS

abc ABILENE
abc AMARILLO
abc AUSTIN
abc BROWNSVILLE
abc CORPUS CHRISTI
abc DALLAS-FORT WORTH
abc DEL RIO
abc EL PASO
ac GALVESTON
abc HOUSTON
abc LUBBOCK
abc MIDLAND
abc PORT ARTHUR
abc SAN ANGELO
abc SAN ANTONIO
abc VICTORIA
abc WACO
abc WICHITA FALLS

UTAH

abc MILFORD
abc SALT LAKE CITY

VERMONT

abc BURLINGTON

VIRGINIA

abc LYNCHBURG
abc NORFOLK
abc RICHMOND
abc ROANOKE
ab WALLOPS ISLAND

WASHINGTON

abc OLYMPIA
abc QUILLAYUTE AIRPORT
abc SEATTLE-TACOMA AP
ac SEATTLE URBAN SITE
abc SPOKANE
abc STAMPEDE PASS
ac WALLA WALLA
abc YAKIMA

WEST INDIES

abc SAN JUAN, P.R.

WEST VIRGINIA

abc BECKLEY
abc CHARLESTON
abc ELKINS
abc HUNTINGTON
ac PARKERSBURG

WISCONSIN

abc GREEN BAY
abc LA CROSSE
abc MADISON
abc MILWAUKEE

WYOMING

abc CASPER
abc CHEYENNE
abc LANDER
ac SHERIDAN

a. Monthly summary issued.

b. Monthly summary includes available 3-hourly observations

c. Annual Summary issued.

(1) Station closed April 30 1979. Publications discontinued

(2) Station closed September 1978. Publications discontinued

MARINERS WEATHER LOG

This bimonthly publication was initially issued in January 1957 to fill a recognized need to furnish weather information affecting marine commerce to mariners.

The current publication contains meteorological and climatological information for use by the Maritime Industry and Cooperative National Weather Service Marine Observers. Articles include material on marine meteorology in the North Atlantic and North Pacific Oceans and on the Great Lakes, and matters of current maritime interest with attendant graphs and charts. Also included are features which provide additional useful information to mariners:

Hints to Observers - brings the latest observing techniques, requirements, and code changes to the attention of the cooperating marine observer.

Tips to the Radio Officer - includes information on the latest radio frequencies to obtain World wide Marine Weather Broadcasts.

Hurricane Alley - contains information on global tropical cyclone activity.

Marine Weather Diary - presents narrative marine climatological summaries of weather, winds, gales, extratropical and tropical cyclones, sea heights, and visibility for the subsequent two months.

Rough logs (incomplete records) of general weather conditions prevailing over the North Atlantic and North Pacific Oceans during the second and third months prior to the date of each issue, and Smooth logs (complete records) of conditions in these areas for the fifth and sixth months prior to the date of each issue, are also furnished. Cyclone-track charts are included for those areas corresponding to the Smooth log months. Tables of Selected Gale and Wind Observations for the North Atlantic and North Pacific Ocean areas are presented together with a bimonthly summarization of basic climatological conditions for U. S. Ocean Buoy Stations (Exhibit 49).

Copies of this publication are available without charge to persons or agencies with a marine interest from the Environmental Data and Information Service, National Oceanographic Data Center (D762), Page Building 1, Room 400, Washington, D.C. 20235.

Table 7
Selected Gale and Wave Observations, North Atlantic
November and December 1978

Vessel	Nationality	Date	Position of Ship Lat. deg.	Position of Ship Long. deg.	Time GMT	Wind Dir. 10°	Wind Speed kt.	Visibility n. mi.	Present Weather code	Pressure mb.	Temperature °C Air	Temperature °C Sea	Sea Waves† Period sec.	Sea Waves† Height ft.	Swell Waves Dir. 10°	Swell Waves Period sec.	Swell Waves Height ft.
NORTH ATLANTIC OCEAN		NOV.															
SEALAND ECONOMY	AMERICAN	1	46.3 N	21.3 W	12	20	45	5 NM	50	1013.2	13.3	15.7	7	8	20	7	19.5
MOHAWK	AMERICAN	1	33.1 N	32.9 W	12	34	45	5 NM	02	1015.2	18.3	23.3	6	19.5			
AMER ACCORD	AMERICAN	4	44.0 N	44.6 W	06	31	45	5 NM	01	1010.8	7.8	17.2					
BALTIMORE TRADER	AMERICAN	25	39.5 N	72.3 W	12	32	45	10 NM	02	1007.5	7.8	14.4	3	14.5	32	6	18
AMER ARCHER	AMERICAN	25	43.1 N	42.0 W	18	16	45	1 NM	02	1006.4	15.6	18.9	5	6.5	14	9	19.5
SEALAND CONSUMER	AMERICAN	26	38.3 N	40.3 W	18	18	41	5 NM	25	1006.0	20.6	17.8	5	13	17	9	14.5
RED JACKET	AMERICAN	26	42.6 N	37.8 W	12	17	50	2 NM	02	1016.0	18.5	17.2	6	19.5	13	6	16.5
EXPORT PATRIOT	AMERICAN	28	45.4 N	31.7 W	20	27	45	10 NM	02	1023.0	12.0	15.6	4	14.5	27	9	19.5
EXPORT PATRIOT	AMERICAN	30	42.7 N	38.8 W	00	28	50	5 NM	02	1000.2	15.6	16.1	4	11.5	25	8	24.5
GEORGE WALTON	AMERICAN	30	46.3 N	31.5 W	06	20	50	2 NM	64	975.5	10.0	13.9			22	6	16.5
AMER ACCORD	AMERICAN	30	45.3 N	35.2 W	11	28	63	2 NM	18	999.9	8.9	12.8		41			

U.S. Ocean Buoy Climatological Data
November and December 1978

```
NOVEMBER                     D A T A     S U M M A R Y                        41001
        AVERAGE LATITUDE  35.0N                 AVERAGE LONGITUDE  072.0W
-----------------------------------------------------------------------------------
MEANS AND EXTREMES                       I          I                    I NO. OF I DAYS WITH
                        MIN    (DA HR) I    MEAN I    MAX    (DA HR) I   OBS  I   DATA
    AIR  TEMP (DEG C)  15.0   (27 05) I    20.7 I    25.8   (28 10) I   250  I    30
    SEA  TEMP (DEG C)  25.0   (22 00) I    25.4 I    24.1   (28 08) I   238  I    30
AIR-SEA TEMP (DEG C)  -08.8   (28 05) I   -02.7 I    00.2   (06 15) I   238  I    30
    PRESSURE  (MBAR) 1005.0   (24 10) I  1028.5 I  1028.6   (28 15) I   238  I    30
-----------------------------------------------------------------------------------
WIND - % FREQUENCIES, MEANS AND EXTREMES
          ^------- SPEED    (KNOTS)-------------^-------^ MEAN
   ----I          4-    11-    22-    34-        I TOTAL I SPEED     NO. OF OBS:   256
   DIR I   <4     10     21     33     47   >47  I   %   I (KNOTS)
   ----I                                         I       I
   N   I    .4    3.6   13.0    2.1              I  18.3 I 14.6       MAX WIND
   NE  I    .4    1.5    8.8     .8              I  10.5 I 14.6     SPEED:  34 KNOTS
   E   I          5.4    6.4    1.7              I  15.4 I 14.1     DIRECTION: 200 DEG
   SE  I    .8    5.8    3.6     .4              I   8.8 I 11.1     DAY:     28
   S   I   1.7    2.1    8.4    1.5     .8       I  14.3 I 14.8     HOUR:    06
   SW  I    .4    4.2    2.8    2.5              I  10.1 I 14.8
   W   I    .8    4.2    5.8    1.3              I  11.5 I 15.1
   NW  I           .4    5.5    5.5              I  11.3 I 10.6
   CALM I   .8                                   I    .8 I   .0
   TOTAL I  5.5   25.1   55.0   15.5     .8      I 100.0 I 14.6
-----------------------------------------------------------------------------------
WAVES - % FREQUENCIES, MEAN AND EXTREME   (METERS)          NO. OF WAVE OBS:   250
HEIGHT  (M)   <1    1-1.5 2-2.5 3-3.5 4-5.5 6-7.5 8-9.5  >9.5 I MEAN    MAX  (DA HR)
% FREQUENCY      4   58.4  26.8  10.8    .4                   I 1.8M   4.8M (25 03)
-----------------------------------------------------------------------------------
```

```
DECEMBER                     D A T A     S U M M A R Y                        41001
        AVERAGE LATITUDE  35.0N                 AVERAGE LONGITUDE  072.0W
-----------------------------------------------------------------------------------
MEANS AND EXTREMES                       I          I                    I NO. OF I DAYS WITH
                        MIN    (DA HR) I    MEAN I    MAX    (DA HR) I   OBS  I   DATA
    AIR  TEMP (DEG C)  00.5   (28 12) I    17.0 I    23.5   (08 00) I   242  I    31
    SEA  TEMP (DEG C)  21.4   (18 00) I    22.4 I    25.7   (01 08) I   243  I    31
AIR-SEA TEMP (DEG C)  -12.7   (28 12) I   -05.3 I    01.3   (10 03) I   242  I    31
    PRESSURE  (MBAR) 1000.2   (21 18) I  1010.5 I  1035.8   (31 15) I   245  I    31
-----------------------------------------------------------------------------------
WIND - % FREQUENCIES, MEANS AND EXTREMES
          ^------- SPEED    (KNOTS)-------------^-------^ MEAN
   ----I          4-    11-    22-    34-        I TOTAL I SPEED     NO. OF OBS:   243
   DIR I   <4     10     21     33     47   >47  I   %   I (KNOTS)
   ----I                                         I       I
   N   I          3.7    8.1    1.8     .4       I  14.8 I 15.7       MAX WIND
   NE  I          1.8    1.2    2.5              I   5.3 I 17.2     SPEED:  38 KNOTS
   E   I          5.7    2.5     .4              I   8.8 I 11.8     DIRECTION: 310 DEG
   SE  I    .8    2.5    1.2    1.2              I   5.8 I 12.8     DAY:     18
   S   I          1.6    2.5    2.1              I   8.2 I 17.5     HOUR:    06
   SW  I    .4     .8   11.8   10.7     .8       I  24.7 I 21.4
   W   I   1.2    2.5    1.6    8.2    1.8       I  13.2 I 20.3
   NW  I    .4    2.5    8.0    7.8    2.5       I  21.8 I 20.8
   CALM I  1.6                                   I   1.0 I   .0
   TOTAL I  4.5   18.8   56.7   32.5    5.5      I 100.0 I 18.3
-----------------------------------------------------------------------------------
WAVES - % FREQUENCIES, MEAN AND EXTREME   (METERS)          NO. OF WAVE OBS:   245
HEIGHT  (M)   <1    1-1.5 2-2.5 3-3.5 4-5.5 6-7.5 8-9.5  >9.5 I MEAN    MAX  (DA HR)
% FREQUENCY    1.2   50.7  25.8  18.1  14.8   1.2             I 2.4M   8.0M (18 12)
-----------------------------------------------------------------------------------
```

```
NOVEMBER                     D A T A     S U M M A R Y                        41004
        AVERAGE LATITUDE  32.6N                 AVERAGE LONGITUDE  078.7W
-----------------------------------------------------------------------------------
MEANS AND EXTREMES                       I          I                    I NO. OF I DAYS WITH
                        MIN    (DA HR) I    MEAN I    MAX    (DA HR) I   OBS  I   DATA
    AIR  TEMP (DEG C)  12.8   (25 18) I    21.1 I    25.4   (30 03) I   663  I    30
    SEA  TEMP (DEG C)  22.5   (08 00) I    24.7 I    28.1   (18 00) I   236  I    30
AIR-SEA TEMP (DEG C)  -11.5   (25 18) I   -03.6 I    01.4   (30 05) I   236  I    30
    PRESSURE  (MBAR) 1010.8   (04 08) I  1020.5 I  1026.6   (20 15) I   236  I    30
-----------------------------------------------------------------------------------
WIND - % FREQUENCIES, MEANS AND EXTREMES
          ^------- SPEED    (KNOTS)-------------^-------^ MEAN
   ----I          4-    11-    22-    34-        I TOTAL I SPEED     NO. OF OBS:   236
   DIR I   <4     10     21     33     47   >47  I   %   I (KNOTS)
   ----I                                         I       I
   N   I    .4    6.8   15.1    2.1              I  24.6 I 12.5       MAX WIND
   NE  I   1.3    3.8   25.6    1.7              I  31.8 I 15.2     SPEED:  24 KNOTS
   E   I   1.7    2.1    2.1                     I   5.8 I  8.2     DIRECTION: 180 DEG
   SE  I    .4    6.4    2.5                     I   9.3 I  8.0     DAY:     27
   S   I    .8    3.4    5.1    1.3              I  10.8 I 13.5     HOUR:    15
   SW  I           .8    5.1     .4              I   6.4 I 15.3
   W   I    .4    2.5    2.1     .8              I   5.8 I 12.4
   NW  I          3.8    1.7                     I   4.7 I  8.3
   CALM I   .8                                   I    .8 I   .0
   TOTAL I  5.8   30.1   57.6    8.4             I 100.0 I 12.6
-----------------------------------------------------------------------------------
```

```
DECEMBER                     D A T A     S U M M A R Y                        41004
        AVERAGE LATITUDE  32.6N                 AVERAGE LONGITUDE  078.7W
-----------------------------------------------------------------------------------
MEANS AND EXTREMES                       I          I                    I NO. OF I DAYS WITH
                        MIN    (DA HR) I    MEAN I    MAX    (DA HR) I   OBS  I   DATA
    AIR  TEMP (DEG C)  07.0   (10 15) I    17.2 I    25.2   (05 03) I   248  I    31
    SEA  TEMP (DEG C)  18.1   (30 08) I    22.2 I    24.4   (01 03) I   248  I    31
AIR-SEA TEMP (DEG C)  -15.2   (10 15) I   -05.0 I    01.5   (08 00) I   248  I    31
    PRESSURE  (MBAR) 1000.8   (25 00) I  1020.7 I  1031.5   (30 15) I   248  I    31
-----------------------------------------------------------------------------------
WIND - % FREQUENCIES, MEANS AND EXTREMES
          ^------- SPEED    (KNOTS)-------------^-------^ MEAN
   ----I          4-    11-    22-    34-        I TOTAL I SPEED     NO. OF OBS:   248
   DIR I   <4     10     21     33     47   >47  I   %   I (KNOTS)
   ----I                                         I       I
   N   I    .4    6.8    8.7    2.6              I  18.6 I 13.5       MAX WIND
   NE  I    .6    5.6   10.1     .6              I  17.3 I 13.8     SPEED:  28 KNOTS
   E   I   1.6    2.0    3.6                     I   7.3 I 10.4     DIRECTION: 310 DEG
   SE  I    .6    2.0    2.0                     I   6.5 I  8.7     DAY:     17
   S   I   1.2    6.0    4.4                     I  12.5 I  8.7     HOUR:    12
   SW  I    .4     .4    7.3    5.2              I  13.3 I 18.3
   W   I    .4    1.6   10.1    2.4              I  14.5 I 16.8
   NW  I    .4    2.4    4.4     .8              I   8.1 I 12.8
   CALM I   .6                                   I    .8 I   .0
   TOTAL I  6.0   26.6   52.4   12.1             I 100.0 I 13.5
-----------------------------------------------------------------------------------
```

```
NOVEMBER                     D A T A     S U M M A R Y                        42001
        AVERAGE LATITUDE  26.0N                 AVERAGE LONGITUDE  090.0W
-----------------------------------------------------------------------------------
MEANS AND EXTREMES                       I          I                    I NO. OF I DAYS WITH
                        MIN    (DA HR) I    MEAN I    MAX    (DA HR) I   OBS  I   DATA
    AIR  TEMP (DEG C)  21.1   (08 00) I    24.8 I    28.2   (27 15) I   228  I    30
    SEA  TEMP (DEG C)  24.7   (28 21) I    25.7 I    26.6   (01 18) I   161  I    30
AIR-SEA TEMP (DEG C)  -04.7   (08 08) I   -01.1 I    01.2   (20 21) I   161  I    30
    PRESSURE  (MBAR) 1008.7   (27 00) I  1017.8 I  1023.1   (02 15) I   227  I    30
-----------------------------------------------------------------------------------
WIND - % FREQUENCIES, MEANS AND EXTREMES
          ^------- SPEED    (KNOTS)-------------^-------^ MEAN
   ----I          4-    11-    22-    34-        I TOTAL I SPEED     NO. OF OBS:   228
   DIR I   <4     10     21     33     47   >47  I   %   I (KNOTS)
   ----I                                         I       I
   N   I   1.3    5.5    5.0                     I  10.5 I  8.8       MAX WIND
   NE  I    .4   15.0   13.0                     I  20.8 I  8.7     SPEED:  18 KNOTS
   E   I    .0   25.0   10.1                     I  38.0 I  8.5     DIRECTION: 170 DEG
   SE  I    .4    7.0    2.2                     I  10.5 I  8.1     DAY:     27
   S   I          4.4    5.7                     I  10.1 I 10.7     HOUR:    15
   SW  I          1.3     .4                     I   1.8 I  8.3
   W   I           .8                            I    .8 I  8.0
   NW  I           .4                            I    .4 I  8.0
   CALM I                                        I       I
   TOTAL I  5.1   61.0   38.0                    I 100.0 I  8.0
-----------------------------------------------------------------------------------
```

```
DECEMBER                     D A T A     S U M M A R Y                        42001
        AVERAGE LATITUDE  26.0N                 AVERAGE LONGITUDE  090.0W
-----------------------------------------------------------------------------------
MEANS AND EXTREMES                       I          I                    I NO. OF I DAYS WITH
                        MIN    (DA HR) I    MEAN I    MAX    (DA HR) I   OBS  I   DATA
    AIR  TEMP (DEG C)  14.8   (10 08) I    21.8 I    28.2   (07 15) I   245  I    31
    SEA  TEMP (DEG C)  25.0   (31 08) I    24.3 I    25.8   (03 15) I   232  I    31
AIR-SEA TEMP (DEG C)  -10.1   (10 00) I   -02.6 I    01.6   (08 21) I   232  I    31
    PRESSURE  (MBAR) 1007.8   (24 00) I  1017.8 I  1028.2   (12 15) I   245  I    31
-----------------------------------------------------------------------------------
WIND - % FREQUENCIES, MEANS AND EXTREMES
          ^------- SPEED    (KNOTS)-------------^-------^ MEAN
   ----I          4-    11-    22-    34-        I TOTAL I SPEED     NO. OF OBS:   245
   DIR I   <4     10     21     33     47   >47  I   %   I (KNOTS)
   ----I                                         I       I
   N   I   1.2    8.5    8.4    1.8              I  18.8 I 12.5       MAX WIND
   NE  I    .8    8.8    8.8     .8              I  21.2 I 10.7     SPEED:  28 KNOTS
   E   I   5.3   15.5    2.0     .8              I  18.8 I  7.2     DIRECTION: 070 DEG
   SE  I    .8    8.8   11.0                     I  20.4 I  8.8     DAY:     27
   S   I    .8    8.1    5.3                     I  12.2 I  8.8     HOUR:    18
   SW  I           .4     .8                     I   1.2 I 10.7
   W   I          2.0     .4                     I   2.4 I  7.7
   NW  I          1.8    2.0                     I   5.7 I 10.8
   CALM I   .4                                   I    .4 I   .0
   TOTAL I  7.5   48.8   40.8    5.5             I 100.0 I  8.8
-----------------------------------------------------------------------------------
```

```
NOVEMBER                     D A T A     S U M M A R Y                        42002
        AVERAGE LATITUDE  26.0N                 AVERAGE LONGITUDE  093.5W
-----------------------------------------------------------------------------------
MEANS AND EXTREMES                       I          I                    I NO. OF I DAYS WITH
                        MIN    (DA HR) I    MEAN I    MAX    (DA HR) I   OBS  I   DATA
    AIR  TEMP (DEG C)  21.7   (28 00) I    24.8 I    28.7   (08 21) I   240  I    30
    SEA  TEMP (DEG C)  25.8   (28 00) I    26.3 I    27.0   (01 21) I   240  I    30
AIR-SEA TEMP (DEG C)  -04.5   (08 03) I   -01.5 I    00.2   (24 15) I   240  I    30
    PRESSURE  (MBAR) 1006.7   (28 21) I  1017.1 I  1023.5   (02 15) I   240  I    30
-----------------------------------------------------------------------------------
WIND - % FREQUENCIES, MEANS AND EXTREMES
          ^------- SPEED    (KNOTS)-------------^-------^ MEAN
   ----I          4-    11-    22-    34-        I TOTAL I SPEED     NO. OF OBS:   240
   DIR I   <4     10     21     33     47   >47  I   %   I (KNOTS)
   ----I                                         I       I
   N   I    .8    1.5    6.3                     I   8.3 I 12.4       MAX WIND
   NE  I    .4    2.1    8.2                     I  11.7 I 15.4     SPEED:  20 KNOTS
   E   I         11.7   21.3                     I  32.8 I 11.8     DIRECTION: 070 DEG
   SE  I   1.7    8.3   18.8                     I  28.7 I 12.1     DAY:     28
   S   I    .8    5.4    7.5                     I  13.8 I 11.5     HOUR:    21
   SW  I    .4    1.3     .8                     I   2.5 I  8.7
   W   I    .4     .4                            I    .8 I  5.0
   NW  I          1.3    2.1                     I   3.3 I 11.0
   CALM I                                        I       I
   TOTAL I  4.8   28.5   65.8                    I 100.0 I 11.8
-----------------------------------------------------------------------------------
```

```
DECEMBER                     D A T A     S U M M A R Y                        42002
        AVERAGE LATITUDE  26.0N                 AVERAGE LONGITUDE  093.5W
-----------------------------------------------------------------------------------
MEANS AND EXTREMES                       I          I                    I NO. OF I DAYS WITH
                        MIN    (DA HR) I    MEAN I    MAX    (DA HR) I   OBS  I   DATA
    AIR  TEMP (DEG C)  13.8   (10 00) I    21.0 I    28.4   (02 21) I   247  I    31
    SEA  TEMP (DEG C)  23.1   (25 00) I    24.8 I    25.8   (02 12) I   247  I    31
AIR-SEA TEMP (DEG C)  -11.5   (10 00) I   -02.7 I    00.8   (08 15) I   247  I    31
    PRESSURE  (MBAR) 1008.2   (24 08) I  1017.8 I  1031.4   (12 15) I   247  I    31
-----------------------------------------------------------------------------------
WIND - % FREQUENCIES, MEANS AND EXTREMES
          ^------- SPEED    (KNOTS)-------------^-------^ MEAN
   ----I          4-    11-    22-    34-        I TOTAL I SPEED     NO. OF OBS:   247
   DIR I   <4     10     21     33     47   >47  I   %   I (KNOTS)
   ----I                                         I       I
   N   I          3.2    6.5    3.2              I  13.0 I 15.8       MAX WIND
   NE  I          8.5   10.8    2.0              I  21.5 I 12.8     SPEED:  30 KNOTS
   E   I          8.8    8.8                     I  15.8 I 12.3     DIRECTION: 330 DEG
   SE  I          3.8   15.4     .8              I  18.8 I 14.5     DAY:     08
   S   I          4.5   17.0    1.8              I  23.1 I 14.4     HOUR:    12
   SW  I    .8     .4    1.2                     I   2.4 I 11.0
   W   I           .4     .8                     I   1.2 I 15.0
   NW  I    .4           2.0     .8              I   3.2 I 18.5
   CALM I                                        I       I
   TOTAL I  1.2   27.5   62.8    8.5             I 100.0 I 14.0
-----------------------------------------------------------------------------------
```

```
NOVEMBER                     D A T A     S U M M A R Y                        42003
        AVERAGE LATITUDE  26.0N                 AVERAGE LONGITUDE  086.0W
-----------------------------------------------------------------------------------
```

```
DECEMBER                     D A T A     S U M M A R Y                        42003
        AVERAGE LATITUDE  26.0N                 AVERAGE LONGITUDE  086.0W
-----------------------------------------------------------------------------------
```

This publication contains monthly means (in metric units) of surface and upper air data for many locations throughout the world. Annual issues are not published. It originated in May 1948 under the title MONTHLY CLIMATIC DATA FOR THE WORLD BY CONTINENTS as a 4-page mimeographed issue. The title was changed to MONTHLY CLIMATOLOGICAL DATA FOR THE WORLD with the July 1948 issue, to MONTHLY CLIMATIC DATA FOR WORLD with the August 1948 issue, and to the present title beginning with the May 1949 issue. Exhibits 50 and 51 are abbreviated examples of the surface and upper air data tables contained in this publication. Late reports and corrections are carried in the first issue following their receipt.

EXHIBIT 50

SURFACE DATA

AUGUST 1978

STATION	LATITUDE	LONGITUDE	ELEVATION	NUMBER OF DAYS OF OBSNS.	PRESSURE: MEAN STATION	PRESSURE: MEAN SEA LEVEL	TEMPERATURE: MEAN	TEMPERATURE: DEPARTURE	VAPOR PRESSURE: MEAN	VAPOR PRESSURE: DEPARTURE	PRECIPITATION: NO. OF DAYS ≥ 1 MM.	PRECIPITATION: TOTAL	PRECIPITATION: DEPARTURE	PRECIPITATION: QUINTILE	SUNSHINE: PERCENTAGE OF LONG-TERM AVERAGE
	° ′	° ′	METERS		MB	MB	°C	°C	MB	MB		MM	MM		%
EUROPE															
SPAIN															
LA CORUNA	43 22 N	08 25 W	67	31	1011.4	1019.5	19.1	+ 0.2	17.2	-0.1	4	12	- 35	1	115
VALLADOLID	41 39 N	04 43 W	715	31	937.4	1014.5	22.0	+ 1.1	11.4	-0.6	2	14	0	3	105
ZARAGOZA	41 39 N	00 53 W	233	31	989.2	1014.7	24.6	+ 0.9	15.5	+0.3	1	5	- 14	2	
MADRID/BARAJAS	40 28 N	03 34 W	606			U									
MADRID/RETIRO	40 24 N	03 41 W	657	31	942.0	1016.2	24.7	+ 1.0	12.4	-0.5	0	0	- 14	0	105
BADAJOZ	38 53 N	06 58 W	195	31	993.2	1015.2	26.5	+ 1.0	14.5	+0.5	0	0	- 4	3	100
SEVILLA/TABLADA	37 22 N	06 00 W	13	31	1015.8	1017.1	26.6	+ 0.3	20.5	+0.9	0	0	- 5	4	110
ALMERIA	36 50 N	02 28 W	7	31	1015.5	1016.3	26.1	+ 0.7	23.7	-0.2	0	0	- 5	3	95
ALICANTE	38 22 N	00 30 W	82	31	1007.8	1016.7	24.6	- 1.2	20.1	-2.6	0	0	- 12	1	90
BARCELONA	41 24 N	02 09 E	95	31	995.9	1016.6	23.5	- 0.8	19.9	-2.6	2	6	- 41	1	110
PALMA DE MALLORCA	39 34 N	02 39 E	17	31	1017.1	1017.8	24.6	+ 0.1	21.9	-1.6	0	0	- 26	2	95
PALMA/SON BONET	39 36 N	02 42 E	45			U									
MAHON. MENORCA/SAN LUIS	39 52 N	04 16 E	59	31	1008.2	1017.8	24.2	- 0.2	21.7	+0.2	0	1	- 21	2	100

EXHIBIT 51

UPPER AIR DATA

STATION	TIME OF OBSERVATIONS	SURFACE* 200 MB: HEIGHT	TEMPERATURE: NUMBER OF MISSING OBTS	TEMPERATURE: MEAN	DEW POINT DEPRESSION	MEAN VECTOR WIND: NUMBER OF MISSING OBTS	STEADINESS FACTOR	DIRECTION	SPEED	850 MB 150 MB: HEIGHT	TEMPERATURE: NUMBER OF MISSING OBTS	TEMPERATURE: MEAN	DEW POINT DEPRESSION	MEAN VECTOR WIND: NUMBER OF MISSING OBTS	STEADINESS FACTOR	DIRECTION	SPEED	700 MB 100 MB: HEIGHT	TEMPERATURE: NUMBER OF MISSING OBTS	TEMPERATURE: MEAN	DEW POINT DEPRESSION	MEAN VECTOR WIND: NUMBER OF MISSING OBTS	STEADINESS FACTOR	DIRECTION	SPEED
EUROPE		GPM		°C	°C		%	°	MPS	GPM		°C	°C		%	°	MPS	GPM		°C	°C		%	°	MPS
GREENLAND																									
EGEDESMINDE	3	1.002		6.1	2.1					1.377	0	1.3	7.0	0	46	167	3	2.917	0	-6.7	7.2	0	56	166	4
		11.724	0	-46.0		0	66	190	8	13.645	1	-44.7		1	73	197	7	16.358	2	-44.5		2	82	194	5
ANGMAGSSALIK	3	1.005		7.5	2.9					1.415	0	1.7	5.9	0	54	92	4	2.959	0	-5.1	7.6	0	43	147	4
		11.782	0	-47.6		0	63	220	14	13.685	0	-47.3		0	68	221	6	16.361	0	-47.8		0	71	220	4
NARSSARSSUAQ	3	1.008		9.8	4.9					1.407	0	3.5	5.5	1	42	121	2	2.960	0	-4.2	5.8	1	32	46	4
		11.861	0	-46.1		1	70	63	11	13.779	0	-45.5		1	81	59	10	16.475	1	-45.4		2	71	60	5
ICELAND																									
KEFLAVIK	2	1.008		11.5	2.8					1.436	0	3.9	8.3	0	41	187	3	2.999	0	-2.3	11.1	0	36	221	3
		11.885	0	-50.6		0	52	246	9	13.773	0	-48.8		0	60	249	6	16.436	0	-48.8		0	59	240	3
UNITED KINGDOM																									
LERWICK	3	1.005		11.2	1.8					1.461	0	5.2	6.3	0	34	284	3	3.025	0	-2.1	10.1	0	38	291	4
		11.888	0	-51.7		0	59	304	12	13.764	0	-49.9		0	63	301	8	16.412	0	-50.2		0	57	303	4
STORNOWAY	3	1.015		12.3	1.5					1.478	0	5.5	4.9	0	37	268	3	3.048	0	-1.1	8.7	0	45	284	5
		11.945	0	-52.9		0	61	292	12	13.809	0	-51.5		0	66	294	9	16.442	0	-51.1		0	63	294	5
AUGHTON	1	1.011		14.3	2.9					1.494	0	6.3	4.4	0	52	286	5	3.067	0	-1.2	6.2	0	55	299	6
		11.946	0	-53.9		0	69	302	14	13.795	0	-53.6		0	75	299	10	16.397	0	-53.6		0	66	291	5
CRAWLEY	3	1.001		14.9	3.6					1.508	0	6.5	4.2	0	57	276	5	3.083	0	-0.3	9.1	0	59	282	6
		11.981	1	-54.0		1	68	295	14	13.826	1	-54.1		1	72	292	10	16.419	1	-54.5		1	73	286	5
IRELAND																									

MONTHLY SUMMARY, SOLAR RADIATION DATA

This publication, issued monthly only, began with data for January 1977. It presents for stations in the National Oceanic and Atmospheric Administration network (Exhibit 52) edited hourly and daily values of global (hemispheric) solar radiation in kilojoules per square meter (Exhibit 53). Data which are estimated, obtained from radiation models, or judged to be questionable are flagged. A station index which shows the type(s) of data published for each station (Exhibit 54) and descriptions of the data processing and flagging procedures are also included in each issue. The number of stations in the observing network is expected to increase in the 1980s. Normal incidence diffuse, and other types of solar radiation data will be included in this monthly publication in future years.

Solar radiation data for earlier years have been published in several publications. Data for as many as 33 stations that reported daily global and/or normal incidence radiation were published in the March 1914 through December 1949 issues of the MONTHLY WEATHER REVIEW. Daily global solar radiation data for as many as 80 stations were published in CLIMATOLOGICAL DATA, NATIONAL SUMMARY (CDNS) from January 1950 through August 1972 and from July 1975 through December 1976. Normal incidence solar radiation and net radiation data have been published in CDNS for a few stations since January 1950 (Exhibit 25). Monthly and annual means of daily global solar radiation data for the current year and the period of record for 62 National Weather Service stations were published in the annual issues of LOCAL CLIMATOLOGICAL DATA from 1963 through 1971. Much of the published global solar radiation data prior to July 1975 are considered questionable and should be used with caution.

EXHIBIT 52

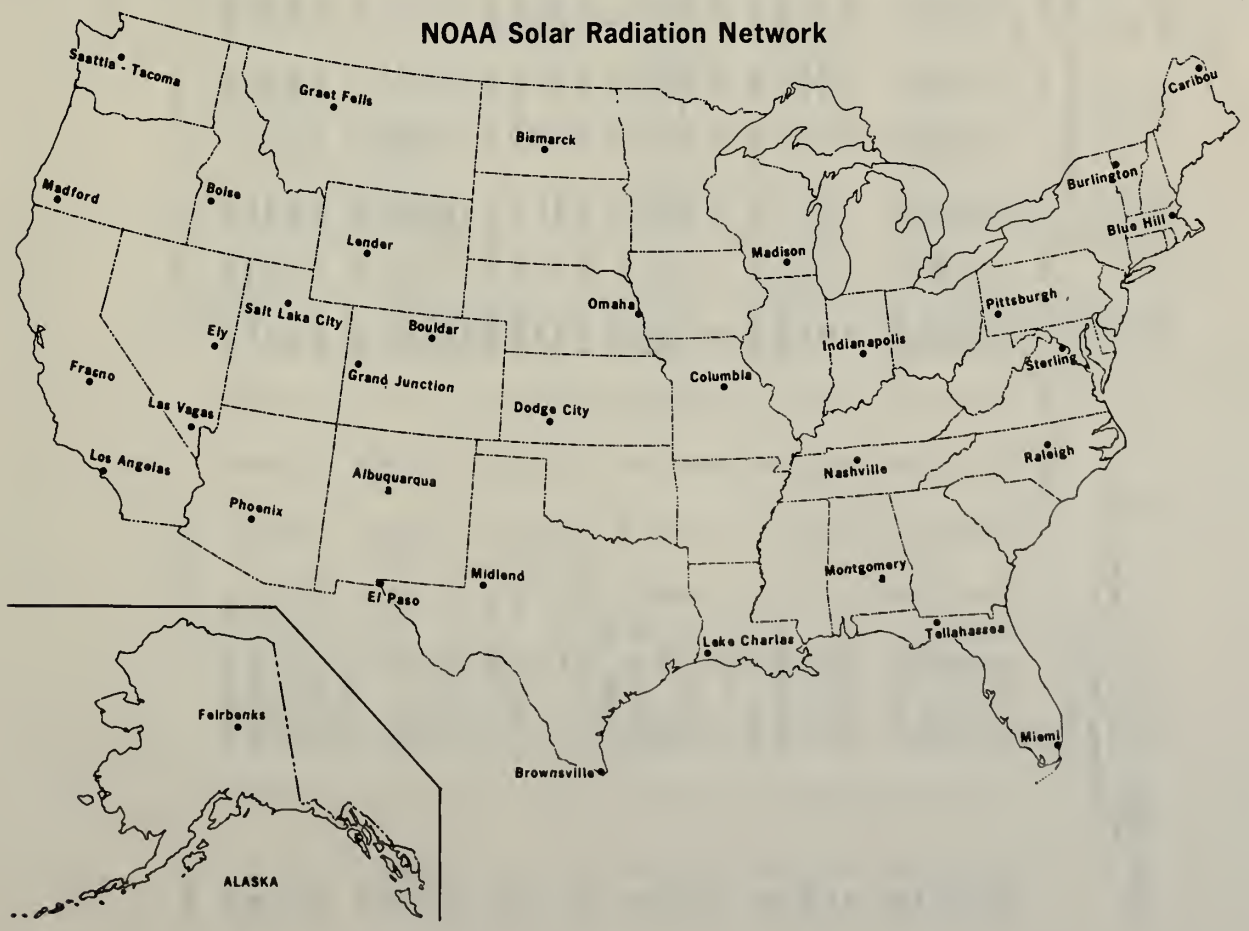


EXHIBIT 53

STATION 23183
N33.26 W112.01 ELEV (M MSL) 0339
PYRANOMETER SPEC SR-75

PHOENIX, AZ
NOVEMBER 1977

EDITED GLOBAL RADIATION
RADIATION FOR EACH HOUR ENDING AT LOCAL STANDARD TIME (KILOJOULES PER SQUARE METER)

DAY	C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	TOTAL
01	0	0	0	0	0	0	0	0	234	727	1559	2178	2470	2502	2300	1876	1249	544	47	0	0	0	0	0	0	15686
02	0	0	0	0	0	0	0	4	331	997	1660	2164	2426	2448	2236	1786	1177	482	40	0	0	0	0	0	0	15751
03	0	0	0	0	0	0	0	4	310	979	1616	2092	2376	2412	2228	1818	1213	526	36	0	0	0	0	0	0	15610
04	0	0	0	0	0	0	0	0	281	918	1523	2045	2322	1717	1591	785	799	497	43	0	0	0	0	0	0	12521
05	0	0	0	0	0	0	0	0	234	907	1516	2056	2236	2401	2189	1757	1163	472	32	0	0	0	0	0	0	14963
06	0	0	0	0	0	0	0	0	32	155	443	868	2153	2041	1055	544	284	76	0	0	0	0	0	0	0	7651
07	0	0	0	0	0	0	0	0	342	814	1393	1692	2120	868	1192	655	576	367	36	0	0	0	0	0	0	10055
08	0	0	0	0	0	0	0	0	256	900	1534	1847	2300	2322	2081	1642	1080	450	32	0	0	0	0	0	0	14444
09	0	0	0	0	0	0	0	0	256	925	1577	2074	2365	2426	2243	1811	1206	497	36	0	0	0	0	0	0	15416
10	0	0	0	0	0	0	0	0	252	896	1584	2092	2387	2437	2236	1836	1202	493	36	0	0	0	0	0	0	15451
11	0	0	0	0	0	0	0	0	50	817	1465	1994	2336	2394	2185	1739	1163	450	29	0	0	0	0	0	0	14622
12	0	0	0	0	0	0	0	0	137	472	1163	1778	2297	2333	2135	1714	1105	450	22	0	0	0	0	0	0	13606
13	0	0	0	0	0	0	0	0	227	857	1490	1973	2308	2322	2185	1472	936	353	18	0	0	0	0	0	0	14141
14	0	0	0	0	0	0	0	0	148	911	1422	1897	2182	2218	2027	1624	1033	418	18	0	0	0	0	0	0	13898
15	0	0	0	0	0	0	0	0	130	554	1145	1876	2171	2095	1843	1688	947	367	18	0	0	0	0	0	0	12834
16	0	0	0	0	0	0	0	0	176	778	1390	1872	2138	2214	1998	1598	1022	392	14	0	0	0	0	0	0	13592
17	0	0	0	0	0	0	0	0	180	778	1390	1876	2171	2236	2038	1631	1055	403	14	0	0	0	0	0	0	13772
18	0	0	0	0	0	0	0	0	166	785	727	792	997	2124	2002	1598	1087	403	14	0	0	0	0	0	0	10695
19	0	0	0	0	0	0	0	0	22	346	1105	1652	2207	2236	2009	1598	943	385	22	0	0	0	0	0	0	12525
20	0	0	0	0	0	0	0	0	151	626	1303	1019	1552	2142	1915	1166	803	421	32	0	0	0	0	0	0	11130
21	0	0	0	0	0	0	0	0	173	727	1321	1318	1652	1573	1552	745	724	371	14	0	0	0	0	0	0	10170
22	0	0	0	0	0	0	0	0	184	716	1350	1696	2052	1750	1501	1177	637	266	11	0	0	0	0	0	0	11340
23	0	0	0	0	0	0	0	0	140	724	1328	1829	2070	2113	1951	1537	954	349	11	0	0	0	0	0	0	13006
24	0	0	0	0	0	0	0	0	68	630	1285	1739	2016	2081	1922	1530	976	342	11	0	0	0	0	0	0	12600
25	0	0	0	0	0	0	0	0	133	684	1285	1764	2034	2088	1915	1530	968	335	7	0	0	0	0	0	0	12743
26	0	0	0	0	0	0	0	0	144	648	1292	1782	2066	2146	1955	1552	958	364	11	0	0	0	0	0	0	12918
27	0	0	0	0	0	0	0	0	101	630	1249	1717	2041	1890	1724	1246	572	223	4	0	0	0	0	0	0	11397
28	0	0	0	0	0	0	0	0	97	634	1220	1674	1998	2034	1908	1480	850	274	11	0	0	0	0	0	0	12180
29	0	0	0	0	0	0	0	0	115	659	1271	1760	2074	2160	1904	1321	1012	331	14	0	0	0	0	0	0	12621
30	0	0	0	0	0	0	0	0	97	587	1195	1562	1958	2052	1847	1534	947	223	4	0	0	0	0	0	0	12006
MEAN		0	0	0	0	0	0	0	172	726	1327	1756	2116	2126	1929	1466	955	384	21	0	0	0	0	0	0	12978

STATION-INDEX

STATION-NAME	STN NUMBER	LAT (DEG.MIN)	LON (DEG.MIN)	ELEV (M)	SOLAR-RADIATION-DATA-TYPES GBL	DIR	DIF	NET	TLT	UV	IR	OTR	OBSERVER
FAIRBANKS, AK	26411	64.49N	147.52W	143									NATIONAL WEATHER SERVICE
MONTGOMERY, AL	13895	32.18N	86.24W	68	X								NATIONAL WEATHER SERVICE
PHOENIX, AZ	23183	33.26N	112.01W	339	X								NATIONAL WEATHER SERVICE
FRESNO, CA	93193	36.46N	119.43W	102									NATIONAL WEATHER SERVICE
LOS ANGELES, CA	23174	33.56N	118.24W	37									NATIONAL WEATHER SERVICE
BOULDER, CO	94018	40.01N	105.15W	1634	X								AIR RESOURCES LABORATORY
GRAND JUNCTION, CO	23066	39.07N	108.32W	1473									NATIONAL WEATHER SERVICE
MIAMI, FL	12839	25.49N	80.17W	8									NATIONAL WEATHER SERVICE
TALLAHASSEE, FL	93805	30.23N	84.22W	18	X								NATIONAL WEATHER SERVICE
BOISE, ID	24131	43.34N	116.13W	873	X								NATIONAL WEATHER SERVICE
INDIANAPOLIS, IN	93819	39.44N	86.16W	244	X								NATIONAL WEATHER SERVICE
DODGE CITY, KS	13985	37.46N	99.58W	795	X								NATIONAL WEATHER SERVICE
LAKE CHARLES, LA	03937	30.07N	93.13W	19	X								NATIONAL WEATHER SERVICE
BLUE HILL, MA	14753	42.13N	71.07W	200	X								NATIONAL WEATHER SERVICE
CARIBOU, ME	14607	46.52N	68.01W	195	X								NATIONAL WEATHER SERVICE
COLUMBIA, MO	03945	38.49N	92.13W	277	X								NATIONAL WEATHER SERVICE
GREAT FALLS, MT	24143	47.29N	111.22W	1118									NATIONAL WEATHER SERVICE
RALEIGH, NC	13722	35.52N	78.47W	137	X								NATIONAL WEATHER SERVICE
BISMARCK, ND	24011	46.46N	100.46W	511	X								NATIONAL WEATHER SERVICE
OMAHA, NE	94918	41.22N	96.01W	404	X								NATIONAL WEATHER SERVICE
ALBUQUERQUE, NM	23050	35.02N	106.37W	1623	X								NATIONAL WEATHER SERVICE
ELY, NV	23154	39.17N	114.51W	1912	X								NATIONAL WEATHER SERVICE
LAS VEGAS, NV	23169	36.05N	115.10W	670	X								NATIONAL WEATHER SERVICE
MEDFORD, OR	24225	42.22N	122.52W	412	X								NATIONAL WEATHER SERVICE
PITTSBURGH, PA	94823	40.30N	80.13W	371	X								NATIONAL WEATHER SERVICE
NASHVILLE, TN	13897	36.07N	86.41W	186	X								NATIONAL WEATHER SERVICE
BROWNSVILLE, TX	12919	25.54N	97.26W	12	X								NATIONAL WEATHER SERVICE
EL PASO, TX	23044	31.48N	106.24W	1206	X								NATIONAL WEATHER SERVICE
MIDLAND, TX	23023	31.57N	102.11W	872									NATIONAL WEATHER SERVICE
SALT LAKE CITY, UT	24127	40.46N	111.58W	1288	X								NATIONAL WEATHER SERVICE
STERLING, VA	93734	38.59N	77.28W	87									NATIONAL WEATHER SERVICE
BURLINGTON, VT	14742	44.28N	73.09W	112	X								NATIONAL WEATHER SERVICE
SEATTLE-TACOMA, WA	24233	47.27N	122.18W	143	X								NATIONAL WEATHER SERVICE
MADISON, WI	14837	43.08N	89.20W	271	X								NATIONAL WEATHER SERVICE
LANDER, WY	24021	42.49N	108.44W	1699	X								NATIONAL WEATHER SERVICE

EXHIBIT 54

RIVER FORECASTS PROVIDED BY THE NATIONAL WEATHER SERVICE

This annual publication, first issued for 1972 data under this title and format, is a successor to DAILY RIVER STAGES (described below). It describes in detail the river forecast and warning services as well as other hydrologic services provided by the National Weather Service. Also included are tables of River Forecast Points and Miscellaneous Information (Exhibit 55), Highest Stages at National Weather Service Gages (Exhibit 56), and Record High Stages Prior to Gage Records (Exhibit 57), and a list of points for which water supply forecasts are issued.

Previous publications (67 volumes) were issued under various titles: Volume 1, STAGES OF THE OHIO RIVER AND OF ITS PRINCIPAL TRIBUTARIES, 1858 TO 1889; Volume 2, STAGES OF THE MISSISSIPPI RIVER AND OF ITS PRINCIPAL TRIBUTARIES, EXCEPT THE OHIO RIVER, 1860 TO 1889; Volume 3, STAGES OF WATER AT MISCELLANEOUS RIVER STATIONS IN CALIFORNIA, OREGON, NORTH CAROLINA, ETC., 1875 TO 1889; Volumes 4-44, DAILY RIVER STAGES AT RIVER GAGE STATIONS ON THE PRINCIPAL RIVERS OF THE UNITED STATES; and Volumes 45-67, DAILY RIVER STAGES. Volumes 4-44 cover the years 1890 through 1948; several of those volumes contain data for more than one year. DAILY RIVER STAGES covers the period 1949 through 1971 and contains river gage data and related information for about 600 stations located on the principal rivers of the United States (Exhibit 58).

Many volumes of these publications are out of print. DAILY RIVER STAGES have been filmed for the period 1968 through 1971. RIVER FORECASTS PROVIDED BY THE NATIONAL WEATHER SERVICE have been filmed for the period 1972 through 1977. The National Climatic Center, Federal Building, Asheville, NC 28801 can provide microform copy of all filmed publications and paper copy of the original records that contain daily river stage data for the years subsequent to 1971.

RIVER FORECAST POINTS AND MISCELLANEOUS INFORMATION

[River stations, arranged by drainage areas, and miscellaneous information pertaining thereto]

Station	River	River District Office	Length of record [1]	Elevation of gage zero above mean sea level [2]	Distance of gage above mouth of river [3]	Drainage area above gage [4]	Flood stage
HUDSON BAY DRAINAGE							
WHEATON, MINN.	MUSTINKA	FARGO, N. DAK.	45	973.30	7.9	834	11
MANTADOR, N. DAK.	WILD RICE	DO	33	997.78	.....	1,360	8 #
ABERCROMBIE, N. DAK.	DO	DO	46	907.94	42.0	2,080	10
ENDERLIN, N. DAK.	MAPLE	DO	22	1,056.72	.....	843	6

HIGHEST STAGES AT NATIONAL WEATHER SERVICE GAGES

[River stations, arranged by drainage areas, and miscellaneous information pertaining thereto]

Station	River	River District Office	Flood stage	Highest stages from gage readings [5]			
				Highest prior to 1977	Date	Highest during 1977	Date
ATLANTIC SLOPE DRAINAGE--CONTINUED							
WEST CAMERON, N. Y.	CANISTEO	BUFFALO, N. Y.	17	22.8	JUNE 23, 1972	....	.....
ADDISON, N. Y.	DO	DO	17	19.7	JUNE 21, 1972	....	.....
LINDLEY, N. Y.	TIOGA	DO	17	26.1	JUNE 23, 1972	....	.....
CORNING, N. Y.	CHEMUNG	DO	29	32.46	SEPT. 26, 1975	22.32	DEC. 15
ELMIRA, N. Y.	DO	DO	10	L 25.2	JUNE 23, 1972	Q 8.7	DEC. 15

RECORD HIGH STAGES PRIOR TO GAGE RECORDS

[Stages have been obtained principally from high water marks; some, however, have been referred to the gages by leveling from unmarked spots, said by local residents to have been reached by floods]

Station	River	Stage	Date
HUDSON BAY DRAINAGE			
HALLOCK, MINN.	TWO RIVERS	812.0	APR. 2, 1942
MINOT (BROADWAY BRIDGE), N. DAK.	SOURIS	1561.0	....., 1881
ST. LAWRENCE DRAINAGE			
MISSISSIPPI SYSTEM--CONTINUED			
OHIO BASIN--CONTINUED			
WHITESBURG, KY.	NORTH FORK KENTUCKY	14.7	JAN. 29, 1957
ONEIDA, KY.	SOUTH FORK KENTUCKY	Q 41.0	JUNE 28, 1947
LAWRENCEVILLE, ILL.	EMBARRASS	24.0	.....+, 1943
BEDFORD (4SW), IND.	EAST FORK WHITE	Q 46.0	MAR. ..., 1913

ATLANTIC SLOPE DRAINAGE

HUDSON RIVER AT MECHANICVILLE, N.Y.
GAGE ZERO, 43.00 FEET, M.S.L. FLOOD STAGE, 10 FEET.
NORMAL POOL STAGE, 5.0 FEET.

1970	Day of month 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Highest or crest	Date	Lowest	Date
JAN	.	5.9	5.8	5.7	5.4	5.9	5.7	5.7	6.2	5.7	5.4	5.2	5.9	5.9	5.6	5.7	5.6	5.3	5.2	5.9	5.9	5.7	5.7	5.6	5.7	5.2	5.8	5.6	5.6	5.6	5.9	6.2	09	5.2	12+
FEB	5.5	5.8	6.1	7.7	7.5	7.2	7.0	6.9	6.3	6.5	6.7	7.6	7.3	7.0	6.5	6.0	6.5	6.4	6.4	6.4	6.1	5.8	.	6.1	5.8	6.2	5.7	5.7				7.7	04	5.5	01
MAR	5.4	5.1	5.9	5.7	5.7	6.1	6.0	5.8	5.2	6.0	6.0	6.0	6.0	5.8	5.7	5.2	6.0	5.9	5.9	5.8	5.9	6.0	6.2	6.8	6.8	6.9	.	7.5	7.5	6.9	6.9	7.5	28+	5.1	02
APR	6.7	6.8	10.1	8.4	7.7	7.5	7.3	7.2	7.5	7.9	7.9	7.4	7.3	7.3	7.3	7.5	7.9	8.4	8.8	8.5	8.7	8.4	8.3	8.0	8.0	8.0	8.1	8.1	8.1	.		10.1	03	6.7	01
MAY	8.1	8.1	.	8.0	8.1	7.5	7.4	7.1	7.0	.	6.6	6.5	6.4	6.5	6.4	6.2	.	6.4	6.5	6.5	6.5	6.5	6.3	.	5.7	5.9	6.2	6.5	.	5.9	.	8.1	01+	5.7	25
JUN	5.5	5.8	5.5	6.3	6.0	5.5	.	5.0	5.4	5.5	5.4	5.0	.	.	5.1	5.1	5.1	5.2	6.4	6.0	.	5.0	5.2	5.1	5.2	5.1	5.3	.	5.3	5.9		6.4	19	5.0	08+
JUL	5.2	5.2	.	5.2	.	5.6	5.4	5.1	5.5	5.3	5.1	.	5.2	5.3	5.3	5.4	5.3	5.5	.	5.0	5.2	5.2	5.4	5.2	5.2	.	5.0	5.3	5.3	5.0	5.2	5.6	06	5.0	20+
AUG	5.2	.	5.2	5.5	5.3	5.9	5.0	5.1	.	5.0	5.2	5.7	5.3	5.0	5.4	.	5.2	5.2	5.2	5.0	5.4	5.3	.	5.1	5.3	5.3	5.4	5.3	5.7	.	5.0	5.9	06	5.0	07+
SEP	5.3	5.2	5.1	5.3	5.1	.	5.0	5.0	6.0	5.3	5.3	5.3	.	5.1	5.7	5.6	5.7	5.5	5.7	.	5.5	5.8	6.2	6.0	5.8	5.4	.	5.7	6.3	6.1		6.3	29	5.0	07+
OCT	6.1	5.9	5.9	.	6.0	6.0	5.9	5.9	5.9	5.6	.	5.0	6.0	5.7	5.6	6.2	.	.	6.0	6.3	6.1	5.9	6.4	6.9	.	6.5	6.5	6.5	6.4	6.2	6.0	6.9	24	5.0	12
NOV	.	5.1	5.3	5.9	5.9	5.9	5.8	.	5.1	5.8	.	5.8	6.1	6.1	.	6.3	6.8	6.6	6.5	6.4	6.6	.	7.1	7.3	7.1	.	.	6.4	.	6.5		7.3	24	5.1	02+
DEC	7.0	7.1	6.9	6.8	7.4	.	6.6	6.5	6.6	6.7	6.6	6.7	.	6.2	6.5	6.2	6.2	6.2	6.2	.	6.0	6.3	6.1	6.2	.	5.9	.	5.5	6.1	6.0	5.8	7.4	05	5.5	28

EXHIBIT 55 EXHIBIT 56 EXHIBIT 57 EXHIBIT 58

This annual report presents monthly data on snow depth and its water equivalent for the season December through April (Exhibit 59). These data are compiled by the U.S. Geological Survey and published by the National Weather Service. The area covered by the report includes about 700 stations in New England and New York State, and a few reporting stations in Pennsylvania. The number of stations may vary from season to season.

This annual summary of snow cover data for New York and New England started in 1941, when the efforts of many diverse interests were brought together under the auspices of the Eastern Snow Conference. The report is a result of the cooperative efforts of federal, state, and municipal governmental agencies and commissions, public utilities, and private industries.

Additional detailed information, where available, may be obtained from the agency furnishing the data or the appropriate office of the U.S. Geological Survey at the following locations:

District Chief
U.S. Geological Survey-WRD
P.O. Box 1350
Albany, NY 12201

Hydrologist-in-Charge
USGS-WRD
26 Ganneston Dr.
Augusta, ME 04330

District Chief
USGS-WRD
150 Causeway St.
Suite 1001
Boston, MA 02114

EXHIBIT 59

SNOW SURVEY DATA

1977-78

STREAM BASINS SNOW COURSES AND STATE	LOCATION			AGENCY FURNISHING DATA	DECEMBER			JANUARY			FEBRUARY			MARCH			APRIL		
	ELEV	LAT.	LONG		DATE	INCHES SNDW DEPTH	INCHES WATER EQUIV.	DATE	INCHES SNOW DEPTH	INCHES WATER EQUIV	DATE	INCHES SNDW DEPTH	INCHES WATER EQUIV	DATE	INCHES SNDW DEPTH	INCHES WATER EQUIV	DATE	INCHES SNDW DEPTH	INCHES WATER EQUIV
		° '	° '																
North Creek, N.Y.	1150	43 43	73 59	Niagara Mohawk Power Corp.				3	17.3	3.58	1	28.0	6.56	1 15 27	26.6 23.6 23.7	6.77 6.01 7.20	10 24	17.4 0.0	6.9 0.0
Olmstedville, N.Y.	1340	43 45	73 55	NYS Dept. of Environmental Conservation				2 30	16.0 24.0	- -	27	23.0	-	13 26	20.0 19.0	- -	10	13.0	-
Paradox Lake, N.Y.	950	43 53	73 40	Niagara Mohawk Power Corp.				4 31	16.4 29.3	3.40 6.67	28	27.7	7.36	14 28	28.2 16.8	8.57 5.50	11 25	15.8 P	5.9 P
Peters Corners, N.Y.	1520	43 10	74 24	Board of Hudson River-Black River Regulating District				3 30	29.7 37.4	6.36 9.40	27	36.4	10.54	13 28	36.0 34.4	10.43 11.54	10 24	30.4 17.4	10.96 6.40
Piseco, N.Y.	1680	43 26	74 31	"				3 30	27.4 36.4	5.58 8.98	27	38.6	10.28	13 28	35.6 35.6	10.10 11.03	10 24	30.4 10.4	10.16 4.12
Sacandaga Park, N.Y.	810	43 13	74 11	"				4 31	19.0 25.6	4.03 6.38	28	25.4	6.48	14 29	24.2 22.2	7.50 7.28	11 25	13.8 0.0	4.52 0.0
Saratoga Battlefield, N.Y.	300	43 01	73 39	U.S. Geological Survey				3 30	6.0 9.1	1.20 2.75	27	8.2	2.50	14 27	6.7 1.6	2.54 1.05	10	0.0	0.0
Schroon Lake, N.Y.	878	43 50	73 47	NYS Dept. of Environmental Conservation				2 30	13.0 28.0	- -	27	26.0	-	6 13	28.0 15.0	- -			
Schroon River, N.Y.	930	44 01	73 42	National Weather Service				2 30	22.0 30.0	3.40 8.00	27	29.0	9.00	13 27	25.0 25.0	8.00 10.0	10 24	T 0.0	T 0.0

This annual publication, issued from 1955 through 1976, presented precipitation data and a station index for locations in the remote areas in the States of Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming that are equipped with storage precipitation gages that require reading and maintenance only at monthly or seasonal intervals (Exhibit 60). It also contained a station location map for each State or portion of a State. This data bulletin was terminated as a separate publication with the data for the 1975-1976 season. Data for subsequent seasons are included in the annual issues of CLIMATOLOGICAL DATA for the appropriate State (Exhibit 17); however, data for many stations are no longer received. Volume 21 (1975-1976 season) of this publication contains a listing of stations from which data are no longer received for publication and the offices from which those data may be obtained.

Prior to 1940, some storage-gage station precipitation data were published in monthly issues of CLIMATOLOGICAL DATA for the appropriate State. From January 1940 through August 1948, available storage-gage precipitation data were published for river basin areas (rather than for States) in the HYDROLOGIC BULLETINS. Publication of these data again reverted to the CLIMATOLOGICAL DATA on an annual basis (for the season July through June) in the June 1949, 1950, and 1951 issues and July 1952, 1953, 1954, 1955, and 1956 issues.

EXHIBIT 60

Precipitation Measurements

Observation date	Amount since last obs.(in.)	Snow on ground (in.)
ARIZONA		
AZTEC PEAK		
1975		
Oct 1		
22	1.23	
Dec 30	7.80	
1976		
Jun 1	15.60	
Oct 1	11.35	
ARIZONA		
FOUR PEAKS (Continued)		
1976		
Feb 18	12.61	
Jun 2	6.03	
Oct 4	6.24	
FRAZIER WELL 4 NE		
ARIZONA		
MAVERICK FORK		
1975		
Oct 29		
Dec 2	3.17	
30	2.39	
1976		
Jan 3	.47	
19	.12	
ARIZONA		
RUSTLER PARK (Continued)		
1976		
Mar 7	1.20	3
29	.20	
Apr 17	1.90	18
May 5	.30	
20	.20	
Jun 29	.70	
CALIFORNIA		
ATWELL		
1975		
Sep 10		
1976		
Sep 27	26.10	
CALIFORNIA		
CAMP PIONEER SKI SHELTER (Continued)		
1976		
1976	-	
CAMP SIX LOOKOUT		
1975		

STATION INDEX

ARIZONA

STATION	INDEX NUMBER	COUNTY	LATITUDE	LONGITUDE	ELEVATION (feet, m.s.l.)	RECORD BEGAN MO. YR.	U - UNSHIELDED	TYPE OF GAGE NAME OR SIZE (In.)	HEIGHT OF ORIFICE (Ft.)
AZTEC PEAK	0571	GILA	33 49	110 54	7700	NOV 51		8X24	9
BAKER BUTTE	0577	COCONINO	34 27	111 24	7300	JAN 66		8X42	9
BEAVERHEAD LODGE	0675	GREENLEE	33 41	109 13	8090	JAN 74		8X42	10
CANYON POINT	1251	COCONINO	34 19	110 51	7600	NOV 66		8X42	9
COPPER BASIN DIVIDE	2084	YAVAPAI	34 29	112 31	6720	FEB 64		8X42	10
FLUTED ROCK	3060	APACHE	35 53	109 15	7880	OCT 51		8X24	6
FOUR PEAKS	3193	GILA	33 43	111 20	5150	JUN 52		8X24	7
FRAZIER WELL 4 NE	3237	COCONINO	35 50	113 02	6555	OCT 50		8X24	7
GREER LAKES	3688	APACHE	34 02	109 27	8500	OCT 41		8X24	9
HANNAGAN MEADOWS	3820	GREENLEE	33 38	109 19	9030	SEP 56		8X24	8

This publication, issued monthly only, began with data for January 1959. It presents a chronological listing, by States, of occurrences of storms and unusual weather phenomena, together with data on the paths of individual storms; deaths, injuries, and estimated property damage; and a brief narrative description of each event (Exhibit 61). Among those types of storms and unusual weather phenomena included are: dust devils, waterspouts, hail, snow, rain, freezing precipitation, ice, flooding, flash floods, thunderstorms, wind storms, funnel clouds aloft, tornadoes, lightning, tides, tropical storms, and hurricanes.

From January 1950 through December 1953 some of these data were published as "Severe Storms" and from January 1954 through December 1958 as "Storm Data and Unusual Weather Phenomena" in the monthly issues of CLIMATOLOGICAL DATA NATIONAL SUMMARY. Reports of tornadoes, hail, and losses from wind storms were listed separately in yearly issues of the U.S. METEOROLOGICAL YEARBOOK from 1935 through 1942; the 1943 through 1949 reports were combined into one book. These reports were also listed in yearly issues of THE REPORT OF THE CHIEF OF THE WEATHER BUREAU from 1929 through 1934. Chronological listings of "Severe Local Storms" (particularly tornadoes) were also published in monthly issues of the MONTHLY WEATHER REVIEW from January 1922 through December 1949.

This publication is a good source of information on storms but, due to the difficulties inherent in the collection of this type of data, it is not all inclusive. Subsequent issues carry late reports and corrections.

EXHIBIT 61

STORM DATA AND UNUSUAL WEATHER PHENOMENA

JUNE 1979

PLACE	DATE	TIME - LOCAL STANDARD	LENGTH OF PATH (MILES)	WIDTH OF PATH (YARDS)	NO. OF PERSONS KILLED	NO. OF PERSONS INJURED	ESTIMATED DAMAGE PROPERTY	ESTIMATED DAMAGE CROPS	CHARACTER OF STORM
IOWA									
Monona Clayton County	5	5:30 P			0	0	4	4	Severe Thunderstorm
A severe thunderstorm produced hail up to an inch in diameter and 3 inches deep on the ground. Hail damaged crops, damaged several buildings, cars and stripped leaves off many trees.									
Grundy, SW Black Hawk and Tama Counties	5	5:30 P-7:00 P			0	0	4	5	Severe Thunderstorm
A severe thunderstorm which produced 6 tornadoes (recorded separately), also produced winds in excess of 60 MPH and hail up to 2 1/4 inches in diameter. Wind blew down trees which fell on power lines. Hail damaged many cars and roofs and stripped many trees of their leaves.									
3 NE Gladbrook to near Gladbrook to 5 E Garwin Tama County	5	6:05P-6:24P	12	75	0	0	5	4	Tornadoes (5)
Three small tornadoes touched down in a farmer's field, all within 1/2 mile of each other and moved SW for nearly one mile. At this time the three tornadoes merged into one (we will call tornado A) and moved south for 1 1/2 miles swaying along a path.									
At approximately the same time the first three tornadoes formed, two other tornadoes touched down one mile to the west. After 1/4 mile they merged into one (called tornado B) and moved southwest, approaching the northeast corner of Gladbrook. At this time tornado "B" veered and moved southwest, then east for one mile. One mile to the east of Gladbrook tornadoes "A" and "B" merged and moved southeast. At times two tornadoes were observed side by side and at other times only one. The tornadoes skipped along a path touching down in an erratic fashion until reaching the intersection of Highway 63 and 222. The tornadoes then lifted and dissipated into the clouds.									
3 SW Palo to 4 N Hiawatha Linn County	9	4:13P-4:25P	6	30	0	0	4	0	Tornado
A small tornado touched down at a farm southwest of Palo, damaging a pole barn and twisting off trees. Tornado lifted then touched down briefly 4 miles north of Hiawatha, damaging a fence.									
IOWA (continued)									
2 E Ringsted to 1 W Fenton Emmet and Kossuth Counties, respectively	28	5:25P - 5:36P	6	40	0	0	4	5	Tornado
The small tornado touched down, moved southeast damaging out-buildings in addition to crops before lifting and dissipating.									
3 SW Bancroft to Algona to 1 NE Irvington Kossuth County	28	5:38P - 6:28P	20	300	2	34	7	5	Tornado
A large tornado touched down 13 miles north of Algona and moved south-southeast. The tornado stayed on the ground tearing up crops and damaging numerous farms before slamming into Algona. The tornado destroyed 104 homes and 20 businesses. Numerous trees and cars were also destroyed. 349 homes were damaged. After smashing through Algona the tornado moved south-southeast for 3 miles and then began to narrow and took a turn to the east-southeast before dissipating.									
3 SW Mallard Pocahontas County	28	6:00P	.5	40	0	0	4	2	Tornado
A small rope like tornado touched down damaging out-buildings and destroying crops. Tornado then lifted back into the clouds.									
6 W Palmer (Pocahontas County) to 1/2 NW Knierim (Calhoun County)	28	6:20P-7:10 P	30	350	3	26	7	5	Tornado
Tornado came out of the clouds and moved SE at 15 MPH. At first the tornado was 100 ft wide. Tornado lifted briefly, skipping over a church before staying on the ground for the next 29 miles. As the tornado approached Manson, the speed increased and the tornado widened to 1000 ft just before striking the city. In Manson 110 homes and the junior high school were destroyed. 25 of 35 businesses in business district were destroyed. The tornado continued southeast destroying several farms to Knierim before lifting and dissipating.									
3 N and 1 W St. Joseph to 2 E St. Joseph Kossuth County	28	6:30P-6:45P	4	35	0	0	4	3	Tornado
Tornado touched down in a field, travelled southeast striking a farm and damaging out-buildings and barn. Trees were twisted and crops of corn and soybeans were destroyed.									

SYNOPTIC WEATHER MAPS, DAILY SERIES, NORTHERN HEMISPHERE SEA-LEVEL AND 500-MILLIBAR CHARTS AND DATA TABULATIONS

This series comprises two separate publications, one which presents daily Northern Hemisphere maps (monthly), and one which contains daily data tabulations.

PART I-"Northern Hemisphere Sea-Level and 500-Millibar Charts" is a series of daily synoptic weather maps. It has been published monthly beginning with January 1899. Each volume of the series contains one sea level map and one 500-millibar map for each day of the month. The 500-millibar charts began with the December 1944 issue. Since June 1957, both maps have been prepared from data observed at 1200 GMT. Map times for the period prior to June 1957 are as follows:

Sea Level Maps		500-Millibar Maps	
1300 GMT:	Jan 1899-Jun 1939	0400 GMT:	Dec 1944-Mar 1948
1230 GMT:	Jul 1939-May 1957	0300 GMT:	Apr 1948-Dec 1949
		1500 GMT:	Jan 1950-May 1957

PART II-"Northern Hemisphere Data Tabulations" contain daily synoptic surface and upper air reports. Sea level data are presented in two sections: one for land reports (Exhibit 62); and one for Marine reports (Exhibit 63). These data were for 1200 GMT only until January 1, 1975 when data for 0000 GMT were added. Upper air data include the 0000 GMT radiosonde and rawinsonde reports for all northern hemisphere stations; starting on April 1, 1957, the 1200 GMT reports for stations in North American, selected Atlantic and Pacific Ocean islands and ships are also included (Exhibit 64). Winds aloft data by constant heights for North American stations only were included in the tabulations from July 1, 1955 through December 31, 1970; observation times were 0300, 0900, 1500, and 2100 GMT from July 1, 1955 through May 31, 1957, and 0000, 0600, 1200, and 1800 GMT from June 1, 1957 through December 31, 1970.

This publication began with data for October 1, 1945. It was published on a daily basis through December 1963. Data for November and December 1945 and the period January 1, 1954 through June 30, 1955 were not compiled. The publications through December 1951 were included in the bound volumes of the synoptic maps described in Part I, above; data for January 1, 1952 through December 31, 1953 were issued on a monthly basis in 24 separate volumes. Although formal publication of these data was terminated with the December 31, 1963 issue, the subsequent data have been compiled and filmed. The published data for July 1, 1955 through December 31, 1963 are available only on microfiche; data for January 1, 1964 onward are available on 35mm microfilm. The published data for the period prior to July 1, 1955 have not been filmed but copies of those issues can be supplied from existing stock, if in print, or for the cost of reproduction, if out of print.

Subscriptions to the "Northern Hemisphere Sea-Level and 500-Millibar Charts" as published and "Northern Hemisphere Data Tabulations" as placed on film may be obtained from the National Climatic Center, Federal Building, Asheville, NC 28801.

NOVEMBER 01 1978 1200GMT

SURFACE SYNOPTIC DATA

STATN	U	NDOFF	VVWWW	PPPTT	NCHCC HL	TTAPP MH	7RRJJ OO	SUP 1
13353	2	70000	30102	31506	75600	06205	700//	
13376	2	80000	70102	31408	868//	07203	700//	
13388	2	80000	20102	31008	863//	07103	700//	
13452	2	00603	59020	28311	00800	08303	700//	
13462	2	00000	58020	28608	00800	04209	700//	
13473	2	80000	80022	30508	885//	06101	700//	
13562	2	00704	70020	28111	00800	05103	700//	
13586	2	00000	40100	31805	00800	04312	700//	
15004	2	80000	04444	32806	864//	08400	700//	
15010	2	80000	05484	31807	883//	07210	700//	
15020	2	83206	62026	29410	855//	08213	791//	
15080	2	80000	40102	30907	5742/	07208	700//	
15108	2	93202	01454	///52	9///	52308	700//	
15120	2	80000	60012	32207	8097/	07208	700//	
15150	2	83204	60618	30510	5557/	10215	782//	
15200	2	80000	18102	31608	855//	08208	700//	
15230	2	80000	25102	30708	855//	07206	700//	
15280	2	72706	40402	///55	75/00	55208	700//	

STATN	U	NDOFF	VVWWW	PPPTT	NCHCC HL	TTAPP MH	7RRJJ OO	SUP 1
17150	2	00000	80021	28410	00800	08211	7/////	
17180	2	01101	80020	28210	00800	08204	7/////	
17184	2	00205	75020	27410	00900	C9207	7/////	
17188	2	00403	70021	24606	00800	03208	7/////	
17180	2	53401	75012	25606	45650	03104	7/////	
17195	2	72501	70031	24206	55630	04211	7/////	
17200	2	33108	70020	21208	15830	04213	7/////	
17202	2	22903	81030	19107	25600	04211	7/////	
17218	2	03505	70020	25712	00800	08003	7/////	
17240	2	00701	80021	24107	00900	04208	7/////	
17244	2	73501	70022	26208	35620	05305	7/////	
17280	2	02903	70021	17309	00900	08207	7/////	
17300	2	00302	58020	22012	00900	09303	7/////	
17330	2	03008	75020	20816	00800	06212	7/////	
17350	2	00302	70020	21412	00900	10206	7/////	
17600	2	00603	80020	20418	00900	10103	700//	
17601	2	03101	86020	20714	00800	10104	700//	
17609	2	03102	82020	20713	00900	10106	700//	

STATN	U	NDOFF	VVWWW	PPPTT	NCHCC HL	TTAPP MH	7RRJJ OO	SUP 1
24105	2	62307	60616	81802	65500	51709	797//	4//00
24125	2	82407	05503	855//	01719	//701	795//	
24143	2	81811	65818	03158	8092/	61725	702//	4//60
24266	2	82701	84227	07365	35637	67726	787//	4//78
24328	2	82303	84022	02400	8092/	52710	700//	4//52
24343	2	81810	50717	06061	8822/	62722	702//	4//61
24382	2	83802	84031	12876	00901	78726	700//	4//65
24507	2	72304	84022	05005	70400	52701	700//	4//05
24561	2	82308	84367	///64	8082/	68822	782//	4//67
24628	2	80000	70021	12101	65602	54711	700//	4//50
24638	2	32305	70021	11600	27031	53600	797//	4//50
24641	2	82304	70027	10300	8091/	52715	786//	4//53
24652	2	81106	60717	18164	8052/	67715	701//	4//64
24656	2	80704	70717	20766	8092/	68717	701//	4//70
24671	2	83603	70022	22175	25507	78604	700//	4//75
24688	2	10000	84020	27380	10930	82801	700//	4//82
24724	2	82308	84021	11800	30941	54713	700//	4//50
24738	2	72004	84022	14951	10941	54710	700//	4//50

STATN	U	NDOFF	VVWWW	PPPTT	NCHCC HL	TTAPP MH	7RRJJ OO	SUP 1
28008	2	82304	66717	14355	856//	56217	792//	
28044	2	32302	84030	11157	35600	58210	797//	
28049	2	02001	72020	11858	00900	61206	700//	
28076	2	52303	60027	10954	50830	57214	792//	
28116	2	82701	62032	13456	89600	58211	700//	
28131	2	82503	75717	13256	855//	57210	701//	
28144	2	22002	84020	13057	00901	59208	700//	
28[illegible]	2	62702	78031	17058	65600	59215	792//	
28245	2	72504	40022	14855	38430	56211	797//	
28240	2	42503	83020	14355	49500	57210	797//	
28255	2	22302	81011	13757	25500	59211	700//	
28275	2	02503	84021	14355	00900	58212	797//	
28318	2	02701	84010	17155	00800	57215	700//	
28334	2	82303	89858	15656	835//	57211	701//	
28367	2	02301	84021	16657	00900	59213	797//	
28382	2	62304	84021	14152	60940	55216	797//	
28411	2	83205	60858	16555	834//	56211	705//	
28418	2	80000	40022	17655	2557/	57216	700//	

NOVEMBER 01 1978 1200 GMT

SURFACE MARINE DATA

LAT	LONG	NDOFF	VVWWW	PPPTT	NCHCC HL	OVAPP MH	SUP1 SS	SUP2	SUP3	SUP4	SUP5
785N	0470E	30110	88017	04551	3745/	63216	054//	10102	30503		
786N	1576E	81623	96387	81666	8087/	//730	1///0				
761N	0295E	8////	97022	995//	85///	00706	074//	1021/	32101	89-//	
761N	0296E	81909	87022	99800	855//	00706	05453	10210	32101	99-//	
757N	0287E	61616	98022	00702	655//	92708	058//	10602	20000	32103	00-00
745N	0193E	82G16	86636	94305	053//	00703	006//	10200	30501		
730N	1577W	23604	//020	05284	00901	//203	1///0				
725N	0174E	62818	97022	96505	4234/	73205	05203	10600	32204	00-00	
719N	0336E	81913	96702	02402	835//	72712	05452	10400	30503		
716N	0423E	82408	98022	05000	8072/	33400	058//	10400	30500	00600	
715N	0190E	72421	95818	98804	6947/	00210	05201	10544	30502	98-04	
712N	0071W	6////	98102	90105	58500	00303	002//	10435	3//00	000//	
712N	0300E	62304	98012	02351	85500	63714	056//	10200	30502		
712N	1109E	80240	97158	07224	863//	//312	05823	12805			
710N	0226E	72419	97212	98904	35370	53712	052//	10500	20000	30703	

LAT	LONG	NDOFF	VVWWW	PPPTT	NCHCC HL	OVAPP MH	SUP1 SS	SUP2	SUP3	SUP4	SUP5
555N	0052E	62004	85102	28014	66400	00204	00212	11300	30502		
554N	0146E	52314	96102	28908	35402	71802	00208	10808	30503	22003	
553N	0183E	72614	96052	32010	764//	22400	002//	10842			
553N	0330W	32623	98021	97304	344//	63515	08402	12625	30504	26808	
549N	0055W	22221	98010	20812	24404	72723	05208	11325	30502	99-02	
548N	0047E	12009	95050	28013	/////	00///	1///0				
546N	0351W	62516	97216	93506	65416	92502	052//	10712	20000	30504	22504
544N	0052W	81527	98032	23612	8555/	33702	010//	10751	20000	30504	00-00
542N	0038E	12108	96020	28315	/////	00///	1///0				
541N	0046E	32206	95010	28014	/////	00///	1///0				
536N	0054W	81908	98022	22617	7945/	83///	008//	11350	20000	3//00	00-00
536N	0360W	42628	98258	95506	4336/	24230	05404	10919	30505	23707	
536N	1611E	92216	98000	10807	9/////	12807	002//	10600	30503	00000	
535N	0034E	82116	96052	28114	/////	00///	1///0				
535N	0293W	72030	98032	00208	75300	54400	05803	11233	30503	20606	

LAT	LONG	NDOFF	VVWWW	PPPTT	NCHCC HL	OVAPP MH	SUP1 SS	SUP2	SUP3	SUP4	SUP5
475N	0129W	52116	98022	22718	52460	14206	00616	11500	30502	27805	
475N	0873W	12318	99010	///06	/////	// //	1///0	30502			
474N	0061W	82110	98032	28116	853//	13805	00215	11511	30501	27208	
474N	0213W	83426	87022	15814	4642/	25250	05608	11714	30502	20806	
474N	0374W	72638	87020	85137	44///	52508	04409	11471	30504	26506	
474N	0805W	02428	88020	///08	/////	// //	1///0	30502			
474N	1627E	12114	98011	25506	10740	23400	05401	10805	23804	30503	23804
472N	0063W	82014	88022	///18	/////	00///	1///0				
472N	0065W	81816	98022	27526	855//	53213	020//	11600	30704		
472N	0901W	12428	88020	///08	/////	// //	1///0	32103			
471N	0526W	62007	87011	13308	65644	43201	1///0				
471N	0589W	52725	98021	21304	32341	//130	06200	11067	30504	25406	
471N	1525E	82312	87604	24605	8742/	00207	002//	10380	30502	21804	
470N	0126W	52117	88031	23817	554//	55111	00415	11605	30504	23806	
470N	0170W	02025	97011	18417	00900	//803	00215	11601	30709		

NOVEMBER 01 1978

UPPER AIR DATA

STATN	HR	LVL	HGT GPM	TEMP C	RH %	DIR	SPD MPS
02963	00	448	6428	-26.3	51		
	00	400	7216	-32.1	49	295	013
	00	310	-9998			290	026
	00	304	9090	-46.5	48		
	00	300	9180	-47.1	48	290	028
	00	283	-9999			280	028
	00	268	-9998			295	026
	00	269	9866	-52.3	46		
	00	263	10032	-51.7			
	00	257	10181	-52.5			
	00	250	10360	-52.1		295	024
	00	219	11220	-50.5			
	00	214	-9999			295	021
	00	200	11810	-53.1		305	024
	00	197	11907	-53.5			
	00	194	-9999			310	025
	00	180	12488	-52.9			
	00	150	13660	-55.3		310	024
	00	141	14054	-56.1			
	00	100	16240	-56.7		310	022
	00	95	16554	-56.7			
	00	88	17046	-57.5			
	00	70	18490	-55.9		305	021
	00	69	18581	-55.9			
	00	50	20620	-58.9		320	019
	00	49	20747	-59.1			
	00	31	23833	-57.3			
	00	30	23840	-56.1		305	016
	00	26	-9999	-61.7			

STATN	HR	LVL	HGT GPM	TEMP C	RH %	DIR	SPD MPS
03322	00	869	1355	5.6	57		
	00	850	1535	5.0	61	295	004
	00	722	2844	-4.5	76		
	00	700	3088	-4.7	46	300	006
	00	688	3455	-5.9	16		
	00	518	5442	-14.9	7		
	00	500	5880	-16.7	7	330	009
	00	400	7310	-30.5	9	340	019
	00	387	7547	-31.9	10		
	00	332	8614	-39.3	15		
	00	300	9300	-44.5		330	036
	00	271	9977	-48.7			
	00	250	10500	-50.5		340	034
	00	219	11350	-57.5			
	00	212	11556	-56.7			
	00	200	11920	-54.1		280	018
	00	190	12254	-54.7			
	00	178	12672	-54.5			
	00	168	13045	-51.1			
	00	150	13770	-55.7		275	015
	00	130	14656	-63.1			
	00	120	15163	-60.9			
	00	106	15931	-63.1			
	00	101	16229	-62.1			
	00	100	16280	-62.3		270	014
	00	99	16317	-62.5			
	00	70	18490	-61.9		245	006
	00	50	20580	-59.7		240	008
	00	30	23780	-58.7		270	005

STATN	HR	LVL	HGT GPM	TEMP C	RH %	DIR	SPD MPS
03808	00	250	10520	-52.9		355	023
	00	225	11204	-58.1			
	00	200	11940	-57.9		300	013
	00	158	12611	-57.7			
	00	158	13511	-59.1			
	00	150	13750	-61.3		280	011
	00	138	14363	-63.5			
	00	117	15279	-68.9			
	00	101	16189	-66.5			
	00	100	16210	-66.9		275	006
	00	70	18380	-63.9		260	005
	00	50	20450	-63.5		170	005
	00	1021	30	1.8	98		
	00	1009	134	6.2	77		
	00	1000	208	7.4	79		
	00	988	307	7.4	79		
	00	912	961	3.0	75		
	00	869	1168	1.8	85		
	00	859	1445	2.6	38		
	00	850	1529	2.4	35		
	00	755	2484	-.1	25		
	00	700	3083	-4.3	23		
	00	881	3301	-5.9	21		
	00	838	3835	-8.5	19		
	00	500	5660	-20.9	20		
	00	458	6305	-26.3	31		
	00	421	8912	-28.3	42		
	00	400	7270	-31.3	45		
	00	351	8190	-38.3	47		

STATN	HR	LVL	HGT GPM	TEMP C	RH %	DIR	SPD MPS
04018	00	336	7818	-47.7		225	020
	00	300	8570	-46.7		225	024
	00	250	9790	-44.1		235	025
	00	239	-9999			235	025
	00	200	11280	-45.7		225	023
	00	150	13190	-48.1		230	023
	00	100	15850	-51.1		225	021
	00	70	18150	-54.9		230	020
	00	63	18817	-57.3		230	020
	00	50	20280	-56.3		230	020
	00	41	-9999	-59.3			
	00	994	30	-14.5	74	000	000
	00	1000	-14				
	00	935	492	-16.5	82		
	00	911	687	-16.1	55		
	00	850	1209	-18.5	38		
	00	813	1537	-21.1	33		
	00	700	2641	-22.9	24	120	008
	00	607	3673	-28.1	56		
	00	521	4752	-36.3	77		
	00	500	5040	-38.3	72	125	009
	00	457	5656	-40.1			
	00	400	6560	-46.5		110	010
	00	300	8410	-59.5		130	012
	00	278	8887	-61.9			
	00	250	9540	-59.7		125	011
	00	221	10323	-57.1			
	00	200	10950	-58.7		145	006
	00	150	12780	-56.7		175	003

STATN	HR	LVL	HGT GPM	TEMP C	RH %	DIR	SPD MPS
04360	00	70	17950	-55.1		235	015
	00	57	19199	-57.9			
	00	50	20080	-59.1		240	018
	00	43	20919	-58.9			
	00	38	21998	-63.3			
	00	30	23240	-65.3		260	024
	00	27	23859	-66.5			
	00	20	25700	-65.3			
	00	19	25938	-66.1			
06181	00	1021	40	9.0	88		
	00	1000	211	8.8	83		
	00	964	515	7.6	66		
	00	914	952	4.6	98		
	00	850	1539	1.2	99		
	00	807	1958	-1.1	99		
	00	774	2293	2.0	25		
	00	724	2830	.8	23		
	00	700	3098	-1.1	22		
	00	520	5404	-16.5	19		
	00	500	5890	-18.9	31		
	00	400	7310	-30.9	85		
	00	394	7429	-31.5	67		
	00	300	9290	-48.1			
	00	257	10312	-54.3			
	00	250	10480	-53.7			
	00	227	11113	-51.1			
	00	200	11920	-53.7			
	00	150	13740	-58.9			
	00	130	14658	-61.1			

EXHIBIT 62

EXHIBIT 63

EXHIBIT 64

WEEKLY WEATHER AND CROP BULLETIN

This weekly periodical, prepared jointly by the National Oceanic and Atmospheric Administration and the U.S. Department of Agriculture is especially valuable to agricultural interests. It summarizes weather and its effects on crops and farm activities for the week over the United States and other areas of the world as feasible. This publication began in 1872 as the WEEKLY WEATHER CHRONICLE and, except for a brief period (1881 through 1884), has continued under various titles and content to the present time. The present title was established in January 1924.

The current publication contains a National Weather Summary (Exhibit 65), a National Agricultural Summary (Exhibit 66), a section of State Summaries of Weather and Agriculture containing condensed summaries of specific information for each state (Exhibit 67), and a World Weather and Crop Update (Exhibit 68). Current conditions of small grains, corn, soybeans, cotton, other crops, pastures, and livestock are emphasized. A map and comments on the crop moisture situation are presented throughout the warm season. Also included are special articles on weather and crop conditions, and references to additional articles as pertinent.

Weekly charts of the total precipitation and departures of average temperature from normal are shown while a chart showing the depth of snow on the ground is included during the winter season. Monthly and seasonal charts present the total precipitation, percentage of normal precipitation, and departure of average temperatures from normal. A variety of other charts is included occasionally to illustrate the national distribution of such things as pasture conditions, soil temperatures, accumulated growing degree days, and extended weather outlooks.

Tables presenting (1) weekly average temperature and total precipitation for selected stations, together with departures from normal, (Exhibit 69) and (2) weekly heating-degree days with seasonal accumulations and departure from normal (Exhibit 70) are included in each issue, November through March. The first issue of each month also includes tables showing the average temperature, total precipitation, and total heating-degree days for the previous month at selected stations (Exhibits 71 and 72).

Subscriptions may be ordered from the Agricultural Weather Facility, U.S. Department of Agriculture, South Building, Room 1248, Washington, D.C. 20250.

EXHIBIT 65

National Weather Summary

July 2 - 8

HIGHLIGHTS: A cold front moved into the north central United States and became stationary over the South and southern Plains by week's end. Showers and thunderstorms, some severe, formed along the front in its trek southward. The greatest rain accumulations occurred in the South and central Plains; some stations reported more than 5 inches.

The front ushered in unseasonably cool air; many record low readings chilled the Midwest and Eastern Seaboard. Only the Rocky Mountains showed warmer than normal temperatures.

On Monday, rain extended from the northern Plains to the upper Midwest; 2 inches soaked an area outside Grand Forks, eastern North Dakota, and Duluth, eastern Minnesota. A warm front over Alabama triggered rain and some hail; 2 inches fell in Clay, just north of Birmingham, Ala.

Temperatures were unseasonably cool in the Pacific Northwest and the Midwest. In Washington State's mountains, Stampede Pass set a July record when 5.8 inches of snow blanketed the region. To the east, Fort Wayne, northeastern Indiana, established a record low reading of 50°.

Storms continued in the Dakotas, upper Midwest, and Deep South on Tuesday. By afternoon, storms also moved through the west central Plains to the middle Mississippi Valley.

More than 3 inches drenched parts of central North Dakota, and Duluth got another inch and some flooding. Severe weather extended from northeastern Colorado to Illinois. Wind gusts to 92 mph and 5 to 6 inches of rain bore down on extreme northwestern Kansas. Tornadoes touched down in Minnesota, Iowa, and Illinois.

In the South, nearly 2 inches fell near Montgomery, Ala., and a tornado was sighted in Florida.

EXHIBIT 66

Feb. 6, 1979 Weekly Weather and Crop Bulletin

National Agricultural Summary

January 29 - February 4

HIGHLIGHTS: Biting cold assaulted farmers and livestock throughout the Nation. Low temperatures held field activity to a minimum; farmers spent most of their time caring for livestock and moving snow to keep farmsteads open for feed transport. Cold weather stressed livestock which required heavy amounts of feed to ward off the adverse weather. Most of the Nation reported very little precipitation, however, southern California and parts of Texas received heavy rains which slowed vegetable activity. Farmers prepared some land for spring planting and fertilized some pastures and small grains across the South. Many areas remained too wet for fieldwork. Small grains rated fair to good with snowcover protecting northern stands from the chilling temperatures and winds. Low temperatures kept growth to a minimum in the South. Southern pastures rated mostly fair providing only limited grazing because of the wet, cold conditions. Soil moisture rated adequate to surplus in unfrozen soils. The cotton harvest remained at a virtual standstill in the Southwest; farmers need only a short period of clear, dry weather to finish picking the crop. if drying weather continues; quality and quantity of the remaining crop was questionable. The New Mexico cotton harvest neared completion. California cotton picking, shredding, and disking continued in the San Joaquin Valley for the 1978 crop while pre-irrigation activities began for the 1979 cotton crop.

Florida sugarcane harvest remained on schedule; the crop displayed good condition.

Tobacco plant beds were in good condition in southern areas. Tennessee tobacco growers prepared plant beds for seeding. Kentucky tobacco growers marketed 94% of the 1978 burley crop.

FRUITS AND NUTS: Deciduous fruit growers in southern areas and the Pacific Northwest pruned trees. Other areas of the Nation were too cold for much orchard activity. Washington Concord grapes appeared to survive the low temperatures in good condition.

Florida citrus trees showed excellent condition with moisture adequate to surplus. No freeze damage resulted from the February 2 low temperatures. Texas growers continued to harvest grapefruit and Valencias for fresh market. Arizona citrus harvests moved actively; fruit and trees showed further damage from freezing temperatures. California growers packed desert grapefruit and lemons. Internal and external quality of California Navels suffered from earlier freeze damage.

EXHIBIT 67

State Summaries of Weather and Agriculture

These summaries provide brief descriptions of crop and weather conditions important on a national scale. More detailed data are available in Weather and Crop Bulletins published each Monday by ESCS State offices in cooperation with the National Weather Service.

ALABAMA: Temperatures 10° below normal; coldest midweek 18° below normal. Rain early in week, again over weekend. Totals under 0.50 in. north, 0.50 in. south.

Fieldwork: 2.2 days suitable. Soil moisture adequate. Limited outdoor activity. Plowing 23% complete. Fieldwork behind schedule. Pasture feed short, stored feed mostly adequate. Pastures poor condition. Wheat mostly fair. Livestock fair.

harvest Imperial Valley active in spite strike. First picking strawberries very heavy frost damage Orange, Ventura Counties some damage San Diego. Tomato planting active as weather permits. Rangeland grass conditions improved. Warmer weather needed. Supplemental feeding decreasing; mud continues problem feedlots, dairies. Lambing nearly complete Sacramento Valley full swing north coast.

EXHIBIT 68

World Weather and Crop Update

January 29 - February 4

USSR. Variable precipitation totals of 5 to 20 mm in the Ukraine continued last week's trend of slightly above-normal amounts. The most notable feature was the warm weather which continued throughout the week and left the southern half of the Ukraine without snowcover (fig. 1). Temperatures in the Crimea and along the Black Sea coast of the North Caucasus soared high enough for wheat to break dormancy in some locations. These localized areas would suffer severe winterkill with a return to cold conditions. Snowfall in most northerly agricultural areas continued above normal for the second consecutive week, further improving the moisture outlook for spring planting.

AFRICA. Conditions remained favorable for winter grain crops in northwestern Africa. Rainfall in Tunisia increased to near 20 mm, and Morocco continued with above-normal amounts of up to 60 mm. Rainfall in Algeria dropped to about 5 mm, but soil moisture remained adequate. In South Africa's Maize Triangle, above-normal rainfall amounts of 20 to 45 mm fell in north central portions. Lighter amounts of 10 to 20 mm fell in southwestern and southeastern portions, but perhaps a quarter of the triangle received no rainfall for the second consecutive week. Aside from those latter areas, moisture seemed to be adequate since the abundant rains of three weeks ago.

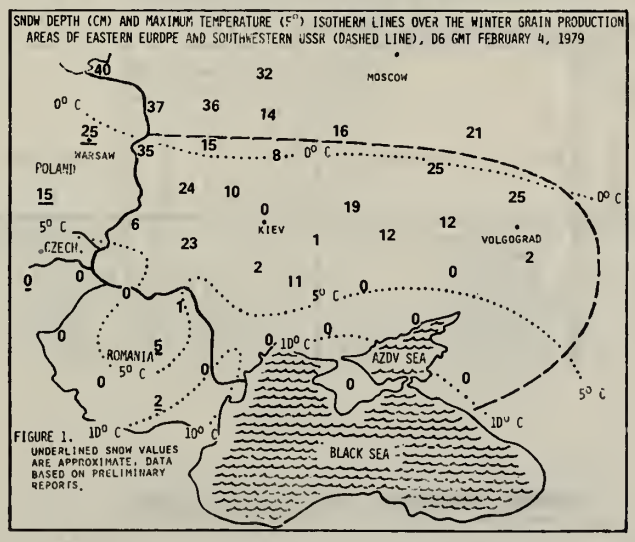


EXHIBIT 69

Temperature and Precipitation Data for the Week Ending Midnight, l.s.t., July 8, 1979

States and Stations	Temperature °F Average	Temperature °F Departure	Precipitation Inches Total	Precipitation Inches Departure	States and Stations	Temperature °F Average	Temperature °F Departure	Precipitation Inches Total	Precipitation Inches Departure	States and Stations	Temperature °F Average	Temperature °F Departure	Precipitation Inches Total	Precipitation Inches Departure
ALA.Birmingham. . .	80	0	1.8	+ .6	LA.Baton Rouge. . .	84	+ 2	1.2	- .2	Youngstown. . . .	61	- 9	.3	- .6
Mobile.	83	+ 2	.2	- 1.8	Lake Charles. . .	83	+ 1	.8	- .7	OKLA.Okla. City . .	83	+ 3	4.8	+ 4.1
Montgomery. . . .	81	0	.5	- .7	New Orleans . . .	85	+ 3	1.5	0	Tulsa	83	+ 2	1.6	+ .7

EXHIBIT 70

Feb. 6, 1979

Weekly Weather and Crop Bulletin

HEATING DEGREE DAYS (BASE 65°) FOR WEEK ENDING FEB. 4, 1979.

STATES AND STATIONS	WEEKLY TOTAL	WEEKLY DEPARTURE*	SEASONAL ACCUMULATION + TOTAL	SEASONAL ACCUMULATION + DEPARTURE*	SEASONAL ACCUMULATION + DEPARTURE FROM 1977-78
ALA. BIRMINGHAM	212	71	1946	64	-246
MOBILE	167	70	1142	1	-338
MONTGOMERY	178	59	1392	-142	-190
ARIZ. FLAGSTAFF	358	106	4359	182	1013
PHOENIX	121	34	1059	-4	601
TUCSON	141	48	1263	116	507
WINSLOW	290	85	3193	182	699
YUMA	107	46	950	224	515
ARK. FORT SMITH	313	143	2648	444	78
LITTLE ROCK	264	95	2422	221	78
CALIF. BAKERSFIELD	110	4	1273	-190	513
EUREKA	162	43	2860	237	512
FRESNO	137	15	1707	-2	471
LOS ANGELES	110	40	874	-66	458
RED BLUFF	147	25	1584	-96	290
SAN DIEGO	81	15	721	-91	502
SAN FRANCISCO	150	42	1913	190	470
STOCKTON	157	28	1873	117	585
COLO. DENVER	363	126	4154	631	758
GRAND JUNCTION	375	127	4346	776	1161
PUEBLO	363	133	4121	801	761
MAINE. CARIBOU	249	-129	5647	34	41
PORTLAND	275	-33	4344	34	-44
MD. BALTIMORE	222	-1	2685	-188	-251
MASS. BOSTON	233	-19	3272	47	119
MICH. ALPENA	336	0	4655	-192	-310
DETROIT	316	36	4031	240	-157
FLINT	337	36	4245	134	22
GRAND RAPIDS	317	23	4383	406	143
HOUGHTON LAKE	340	4	5065	225	80
LANSING	316	15	4238	186	-128
MARQUETTE	387	58	5165	445	349
MUSKEGON	323	29	4383	428	125
S. STE. MARIE	381	23	5552	320	2
MINN. DULUTH	429	38	6157	416	45
INTERNATL FALLS	500	66	7096	736	177
MINNEAPOLIS	446	82	5246	309	-146
ROCHESTER	486	127	5783	837	329
ST. CLOUD	477	89	5968	612	142
MISS. JACKSON	193	70	1710	176	-203
MERIDIAN	199	76	1777	161	42
YOUNGSTOWN	318	38	3831	54	-111
OKLA. OKLAHOMA CITY	314	129	2775	388	133
TULSA	341	155	2831	444	115
OREG. ASTORIA	237	78	3327	345	472
BURNS	388	128	5064	784	1028
MEDFORD	229	45	3182	226	604
PENDLETON	378	168	4380	1123	848
PORTLAND	245	72	3355	510	644
SALEM	249	79	3333	502	614
PA. ALLENTOWN	251	-11	3364	-116	-178
ERIE	318	31	3897	13	-133
HARRISBURG	231	-7	2940	-262	-444
PHILADELPHIA	225	-6	2796	-125	-421
PITTSBURGH	318	59	3777	204	82
SCRANTON	300	27	3927	185	54
R. I. PROVIDENCE	252	-7	3517	91	16
S. C. CHARLESTON	149	37	1244	-173	-274
COLUMBIA	156	23	1505	-221	-568
GREENVILLE	195	41	2076	25	-152
S. DAK. ABERDEEN	534	154	5909	666	-12
HURON	512	155	5627	726	148

EXHIBIT 71

Weekly Weather and Crop Bulletin

Feb. 6, 1979

Temperature and Precipitation Data for January 1979

States and Stations	Temperature °F Average	Temperature °F Departure	Precipitation Inches Total	Precipitation Inches Departure
ALA. Birmingham	38	- 6	5.9	+ 1.1
Mobile	45	- 6	5.1	+ .4
Montgomery	43	- 5	5.7	+ 1.7
ALASKA. Anchorage	22	+10	.2	- .6
Barrow	--	--	--	--
Fairbanks	- 8	+ 4	.6	0
Juneau	21	- 3	2.2	- 1.7
Kodiak	38	+ 8	8.7	+ 3.7
Nome	20	+14	1.1	+ .2
LA. Baton Rouge	43	- 7	6.3	+ 1.9
Lake Charles	44	- 8	4.8	+ .8
New Orleans	46	- 7	5.6	+ 1.1
Shreveport	37	-10	9.2	+ 5.2
MAINE. Caribou	16	+ 5	4.5	+ 2.5
Portland	24	+ 2	11.9	+ 8.5
MD. Baltimore	33	0	7.8	+ 4.9
MASS. Boston	33	+ 4	10.6	+ 6.9
Chatham	33	--	6.6	--
Youngstown	21	- 5	3.0	+ .1
OKLA. Okla. City	25	-12	1.6	+ .5
Tulsa	23	-14	2.1	+ .7
OREG. Astoria	35	- 6	3.8	- 5.9
Burns	16	- 9	3.0	+ 1.2
Medford	36	- 1	2.8	- .7
Pendleton	15	-17	1.4	- .2
Portland	31	- 7	2.6	- 3.3
Salem	31	- 8	2.8	- 4.1

EXHIBIT 72

Feb. 6, 1979

Weekly Weather and Crop Bulletin

Heating Degree Days (Base 65° F.)

January 1979

ALA. Birmingham	841	MAINE, Caribou	1534	OKLA. Okla. City	1221
Mobile	613	Portland	1272	Tulsa	1283
Montgomery	681	MD. Baltimore	984	OREG. Astoria	910
ALASKA, Anchorage	1321	MASS. Boston	1002	Burns U.	1517
Barrow		Chatham	976	Medford	905
Fairbanks	2260	MICH. Alpena	1580	Pendleton	1533
Juneau	1370	Detroit	1432	Portland	1058
Nome	1387	Flint	1516	Salem	1038
ARIZ. Flagstaff	1307	Grand Rapids	1477	PA. Allentown	1142
Phoenix	455	Houghton Lake	1655	Erie	1406
Tucson	511	Lansing	1509	Harrisburg	1104
Winslow	1102	Marquette U	--	Philadelphia	999
Yuma	399	S. Ste. Marie	1733	Pittsburgh	1346

PART II

MARINE PUBLICATIONS

II

MARINE CLIMATOLOGICAL SUMMARIES

This series of publications was prepared and published in cooperation with the World Meteorological Organization (WMO). There are ten volumes, one volume for each year 1961 through 1970. Each volume contains monthly, seasonal, and annual summaries for selected elements for each of 60 marine areas or fixed ships in the United States' assigned area of responsibility (Exhibit 73) and in accordance with WMO requirements.

The tables present monthly and annual observed frequencies of selected visibility, specified weather conditions, total cloud amount with the mean total and low cloud amount, dry bulb temperature, dew point temperature, sea surface temperature, air-sea temperature difference, atmospheric pressure in 2-mb intervals with means for the 0000, 0600, 1200 and 1800 GMT observation times, and wind force by 30° direction sectors. Also included are seasonal tables of observed frequencies of wave heights and periods by 30° direction sectors and for all directions combined. Cloud amount is in OKTAS, (eighths) temperature in degrees Celsius, atmospheric pressure in millibars, wind force in Beaufort scale, wave height in meters, and wave period in seconds.

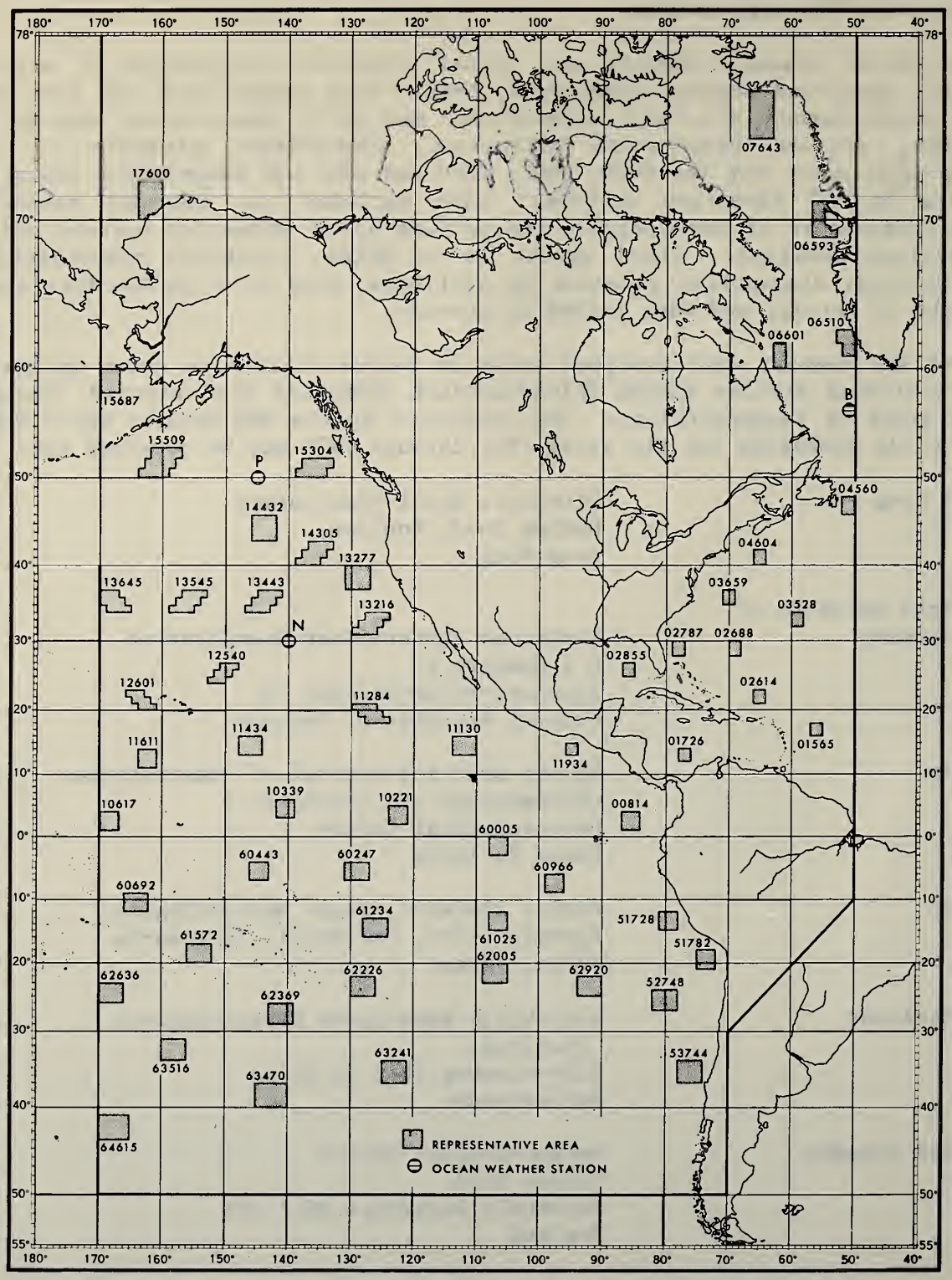
Other WMO members with assigned areas of responsibility as shown in Exhibit 74 have published similar MARINE CLIMATOLOGICAL SUMMARIES for selected locations in their areas of responsibility. The addresses of the WMO members where MARINE CLIMATOLOGICAL SUMMARIES for the years 1961 through 1970 may be obtained are:

Hong Kong	Director, Royal Observatory Nathan Road, Kowloon Hong Kong
Federal Republic of Germany	Deutscher Wetterdienst-Seewetteramt D 2 Hamburg 4 Bernhard-Nocht-Strasse 76 Federal Republic of Germany
India	Deputy Director-General of Observatories (Climatology and Geophysics) Meteorological Office Poona 5, India
Japan	Marine Division, Japan Meteorological Agency, 1-3-4, Ote-Machi, Chiyoda-Ku Tokyo, Japan
Netherlands	Koninklijk Nederlands Meteorologisch Instituut Utrechtseweg 297, De Bilt Netherlands
United Kingdom	Meteorological Office London Road Bracknell Berkshire RG12 2SZ England

U.S.S.R.

Moscow Branch of the State Scientific Research
Institute of Hydrometeorological Information
World Data Center
Ulica Tchikovskogo No. 28/35
Moscow, U.S.S.R.

EXHIBIT 73



Areas of responsibility and responsible Members

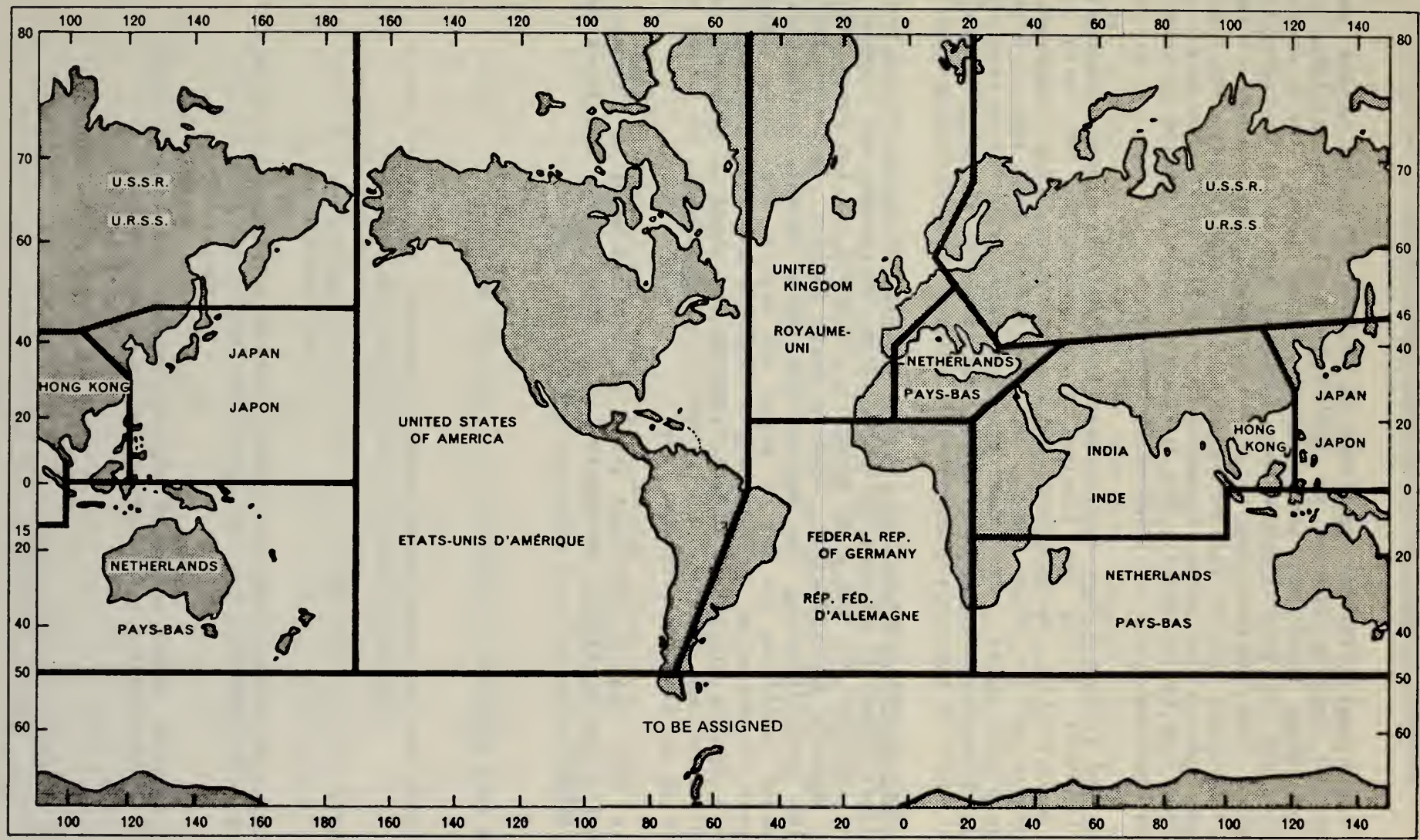


EXHIBIT 74

MARINERS WORLDWIDE CLIMATIC GUIDE TO TROPICAL STORMS AT SEA

This 425 page GUIDE was published in 1974 by Direction of the Commander, Naval Weather Service Command as NAVAIR 50-1C-61. It provides narrative information about where and when tropical storms occur, their frequency of occurrence, and the general paths they follow. The narrative descriptions are supplemented with numerous charts, graphs, and diagrams. Also included are aerial, satellite, and surface photographs of tropical storms, and average sea conditions from 1/4-foot waves to greater than 37-foot waves associated with wind speeds from calm to 130 knots. The charts are presented in two sections: Storm Track and Frequency Maps, and Tropical Cyclone Roses.

The Track and Frequency Maps section provides charts by season, and/or by 10- to 30-day intervals, during the tropical storm season for the North Atlantic, Eastern North Pacific, Western North Pacific, Southeast Indian, Southwest Indian, and Southwest Pacific Ocean basins, and the Arabian Sea, Bay of Bengal, and Indochina oceanic areas. Each chart presents tracks preferred by tropical storms and their frequency along these tracks; and isopleths showing the scaler mean (average) speed in knots of storm movements based on 12 hour displacements.

The Tropical Cyclone Roses section presents monthly and annual charts for various storm stages (tropical cyclone, tropical storm, hurricane, and tropical storm - hurricane combined) for the North Atlantic (including the Caribbean and Gulf of Mexico), Eastern North Pacific, Western North Pacific, Southwest Pacific and Australian area (including the Southeastern Indian Ocean), South Indian, and North Indian (including the Bay of Bengal and Arabian Sea) Ocean basins. The storm roses are presented for five degree latitude-longitude quadrangles. Each storm rose depicts statistics on the direction and speed of 12-hourly movements for tropical cyclone centers. The probability, in percent, of having at least one storm in any given year is also shown.

This GUIDE may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The GPO Stock Number is 003-019-00025-0.

SUMMARY OF SYNOPTIC METEOROLOGICAL OBSERVATIONS (AREA OF WORLD) COASTAL MARINE AREAS

This series of marine meteorological summaries is published by the U.S. Naval Oceanography Command and covers most of the coastal marine areas of the world (Exhibit 75). There are currently (1979), 95 volumes containing standard data summaries for nearly 500 selected marine areas. The initial volumes were published in 1970 with subsequent volumes issued from 1971 through 1979. Revisions are made and published from time to time. These summaries are based upon marine surface observations taken aboard vessels of varying registry in passage. Since such ships tend to avoid bad weather when possible, the data may contain a bias toward good weather. These data were, however, selected by the U.S. Naval Oceanography Command as the most comprehensive collection of marine surface weather observations from which to develop this series.

There are 21 data tables for each area. Tables 1 through 19 are prepared for each calendar month, with an annual summary for each. Tables 20 and 21 contain both monthly and annual summaries. Because the number of observations may vary from one table to the other, no absolute relationship exists between the tables. The period of record used in each volume is indicated.

The tables presented (described below) are based upon 8 observation times per day (GMT). The data units used are: wind direction to 8 compass points; wind speed in knots; cloud, sea, and wave height in feet; wave period in seconds; cloud amount in OKTAS (eighths); visibility in nautical miles; temperature in degrees Fahrenheit; relative humidity in percent; and atmospheric pressure in millibars.

Table 1 - Percentage frequency of weather occurrence by wind direction.

Table 2 - Percentage frequency of weather occurrence by hour.

Table 3 - Percentage frequency of wind direction by speed and by hour and hour groups; the mean wind speed by direction is also shown.

Table 4 - Percentage frequency of wind speed by hour and mean speed by hour.

Table 5 - Percent frequency of total cloud amount by wind direction and the mean cloud amount by wind direction.

Table 6 - Percentage frequency of ceiling heights and no ceiling by wind direction.

Table 7 - Cumulative percent frequency of simultaneous occurrence of ceiling height and visibility, and percentage frequency of low clouds.

Table 8 - Percent frequency of wind direction versus occurrence or non-occurrence of precipitation and varying values of visibility.

Table 9 - Percent frequency of wind direction versus wind speed with varying values of visibility.

Table 10- Percent frequency of ceiling heights and no ceiling by hour.

Table 11- Percent frequency of visibility by hour.

Table 12- Cumulative percent frequency of ranges of visibility and ceiling height by hour.

Table 13- Percent frequency of relative humidity by air temperature.

Table 14- Percent frequency of wind direction by air temperature.

Table 15- Means, extremes, and percentiles of air temperature by hour.

Table 16- Percent frequency of relative humidity by hour.

Table 17- Percent frequency of air temperature and the occurrence of fog (without precipitation) versus air-sea temperature difference.

Table 18- Percent frequency of surface wind speed and direction versus sea height.

Table 19- Percent frequency of wave height versus wave period.

Table 20- Monthly and annual percent frequencies and means of sea surface temperature.

Table 21- Monthly and annual average sea level pressures by hour. Monthly extremes and percentile values are also shown.

Copies of publications in this series can be obtained from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161. The National Climatic Center can supply definitive ordering information when the area(s) and volume number(s) are known. The number of volumes and the total number of sub areas covered in each of the 17 major coastal marine areas in this series are shown below:

Marine Area	Number of Volumes	Number of Sub-areas
EAST AFRICAN AND SELECTED ISLAND AREAS	5	32
SOUTHWEST ASIAN COASTAL AREAS	6	24
SOUTHEAST ASIAN COASTAL AREAS	4	14
INDONESIAN COASTAL AREAS	6	40
AUSTRALIAN COASTAL AREAS	3	22
CHINESE-PHILIPPINE COASTAL AREAS	5	20

Marine Area	Number of Volumes	Number of Sub-areas
HAWAIIAN AND SELECTED NORTH PACIFIC ISLAND COASTAL AREAS	5	17
JAPANESE AND KOREAN COASTAL AREAS	11	33
SIBERIAN COASTAL AREAS	4	28
ALASKAN AND BRITISH COLUMBIAN COASTAL AREAS	5	18
NORTH AMERICAN COASTAL AREAS	6	41
CARIBBEAN AND NEARBY ISLAND COASTAL AREAS	6	35
SOUTH AMERICAN COASTAL AREAS	5	36
MEDITERRANEAN MARINE AREAS	9	35
WEST AFRICAN AND SELECTED ISLAND AREAS	3	22
WESTERN EUROPEAN COASTAL AREAS	8	50
SOUTH PACIFIC ISLAND AREAS	4	32

Other marine climatological publications which present narrative, graphical, chart, or combinations of these, and which contain information similar to that provided in the Summary of Synoptic Meteorological Observations, Coastal Marine Areas Series are:

A Climatic Resume of the Mediterranean Sea (AD-A023 929)

Bermuda Environmental Scenario (AD-A007 448)

Climatological Study, Southern California Operating Area (AD-721 117)

Climatic Study of the Near Coastal Zone, East Coast of the U.S. (AD-A024 991)

Climatic Study of the Near Coastal Zone, West Coast of the U.S. (AD-A024 992)

Climatic Summaries for Major Indian Ocean Ports and Waters (AD-A026 538)

Climatic Summaries for Major Seventh Fleet Ports and Waters (AD-A026 537)

Environmental Guide for the Mona Passage Area

Environmental Guide for Seven (7) U.S. Ports

Environmental Guide for the U.S. Gulf Coast

Northeast Atlantic Environmental Scenario (AD-A002 067)

Northeast Pacific Environmental Scenario (AD-A781 673)

A Study of Fog and Stratus for Selected Cold Regions (AD-A023 591)

Study of Worldwide Occurrence of Fog, Thunderstorms, Supercooled Low Clouds, and Freezing Temperatures (AD-A058 496)

The above publications with the NTIS stock number shown in parentheses are available from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, VA 22161. All others are available from the National Climtic Center.

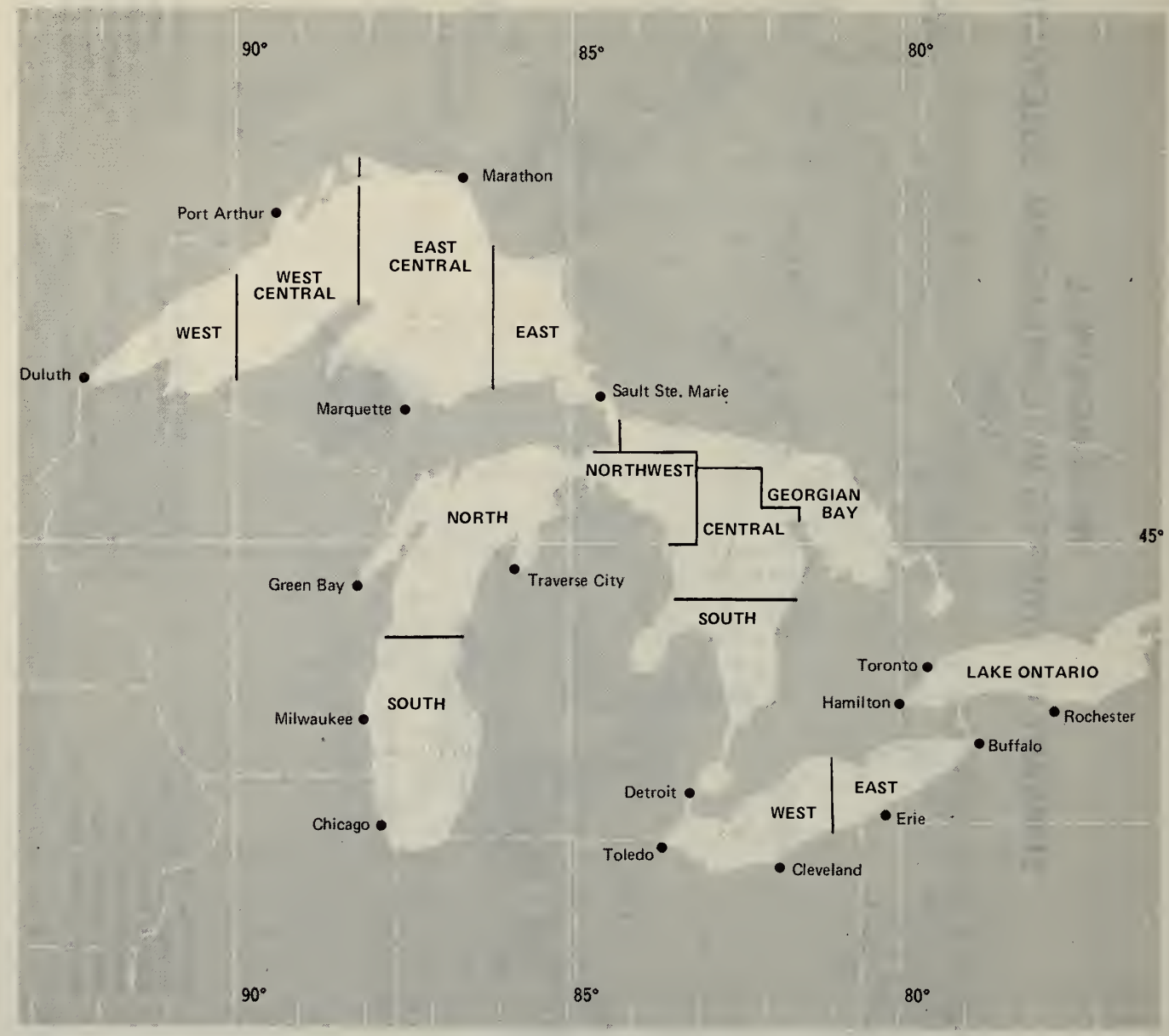
NOCD ASHEVILLE
SUMMARY OF SYNOPTIC METEOROLOGICAL OBSERVATIONS
(SSMO)

EXHIBIT 75

This series of four volumes presents marine climatic summaries for 13 major Great Lakes areas. Exhibit 76 depicts the geographical coverage of each area in Volume I-Lake Ontario and Lake Erie, Volume II-Lake Huron and Georgian Bay, Volume III-Lake Michigan, and Volume IV-Lake Superior. These data summaries are based upon observations taken on board Great Lakes' vessels in passage during the period 1960 through 1973.

The tables are presented in the same formats as those in the SUMMARY OF SYNOPTIC METEOROLOGICAL OBSERVATIONS, COASTAL MARINE AREAS series of publications (see pages 59 through 61).

EXHIBIT 76



THE THIRTEEN MAJOR GREAT LAKES AREAS

This series includes:

Volume 1. Lake Ontario and Lake Erie,
Volume 2. Lake Huron and Georgian Bay,
Volume 3. Lake Michigan,
Volume 4. Lake Superior

TROPICAL CYCLONES OF THE NORTH ATLANTIC OCEAN, 1871-1977

This publication consolidates the records of seasonal and chronological occurrences of tropical cyclones in the North Atlantic Ocean including the Caribbean and Gulf of Mexico. Previous publications were U.S. Weather Bureau Technical Paper No. 36 (1959) and No. 55 (1965). Narrative information provided includes a discussion of the characteristics of tropical cyclones, classification of Atlantic tropical cyclones, data sources used, accuracy of tracks and intensity classifications, North Atlantic tropical cyclone tracks, and the frequency of North Atlantic tropical cyclones with supplemental graphs and tabular material.

Tropical cyclone tracks are shown in a series of charts as follows:

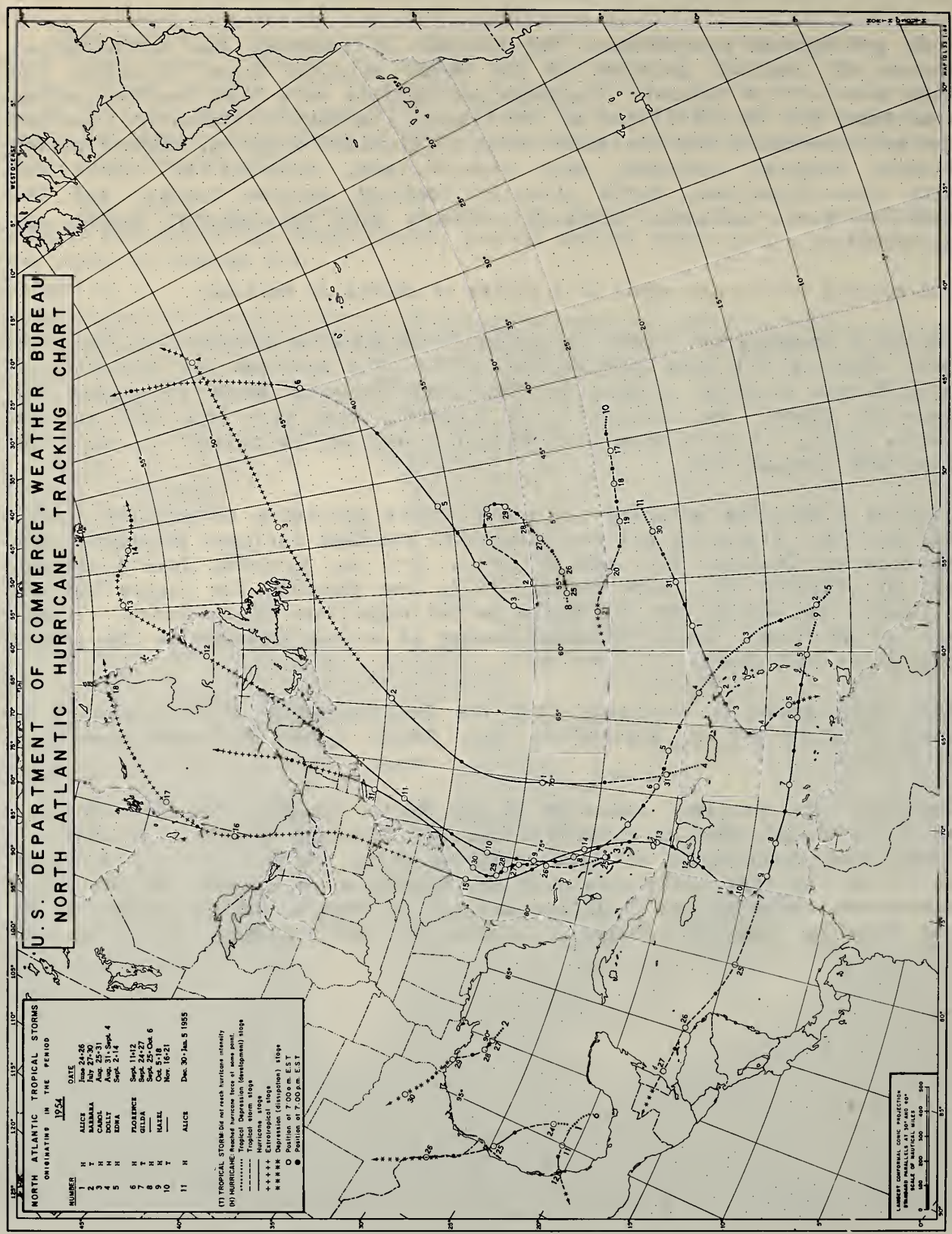
Chart Series A presents the tracks of all recorded Atlantic tropical cyclones for each year (Exhibit 77) from 1871 through 1977. The position and intensity of each significant tropical cyclone in the North Atlantic Basin throughout its existence are shown. No indications of intensity were made from 1871 through 1885, and a simple classification of "tropical storm" or "hurricane" was made for the years 1886 through 1898.

Chart Series B provides groupings of storm tracks according to selected intra-seasonal periods. Tracks of all North Atlantic tropical cyclones by months, May through December (Exhibit 78), and by 10-(or 11-) day periods, June 1 through November 30 (Exhibit 79), 1886 through 1977, are shown. The charts include storms which began within the designated period regardless of intensity, classification, or duration. Also, the total number of storms included in the period is specified on each chart.

This publication is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The GPO Stock Number is 003-017-00425-2.

Separates are prepared annually of the North Atlantic Tropical Cyclones portion of the annual issue of CLIMATOLOGICAL DATA NATIONAL SUMMARY. In addition to a narrative description of each tropical storm which occurred, tropical cyclone tracks for that particular year are presented on a chart of the North Atlantic Ocean, including the Caribbean and Gulf of Mexico. This separate may be obtained from the National Climatic Center, Federal Building, Asheville, NC 28801.

EXHIBIT 77


U.S. DEPARTMENT OF COMMERCE, WEATHER BUREAU
NORTH ATLANTIC HURRICANE TRACKING CHART
NORTH ATLANTIC TROPICAL STORMS
ORIGINATING IN THE PERIOD
1954
NUMBER
DATE
1 H ALICE June 24-26
2 T BARBARA July 27-30
3 H CONNIE Aug. 3-13
4 H DOLLY Aug. 31-Sept. 4
5 H EDNA Sept. 2-14
6 H FLORENCE Sept. 11-12
7 T GILDA Sept. 24-27
8 H HAZEL Oct. 5-18
9 H
10 T Nov. 16-21
11 H ALICE Dec. 30-Jan. 5 1955
(T) TROPICAL STORM: Did not reach hurricane intensity
(H) HURRICANE: Reached hurricane force at some point.
Tropical Depression (development) stage
Tropical storm stage
Hurricane stage
Extratropical stage
Depression (dissipation) stage
Position at 7:00 a.m. EST
Position at 7:00 p.m. EST
LAMBERT CONFORMAL CONIC PROJECTION
STANDARD PARALLELS 30° AND 60°
SCALE OF NAUTICAL MILES
0 100 200 300 400 500

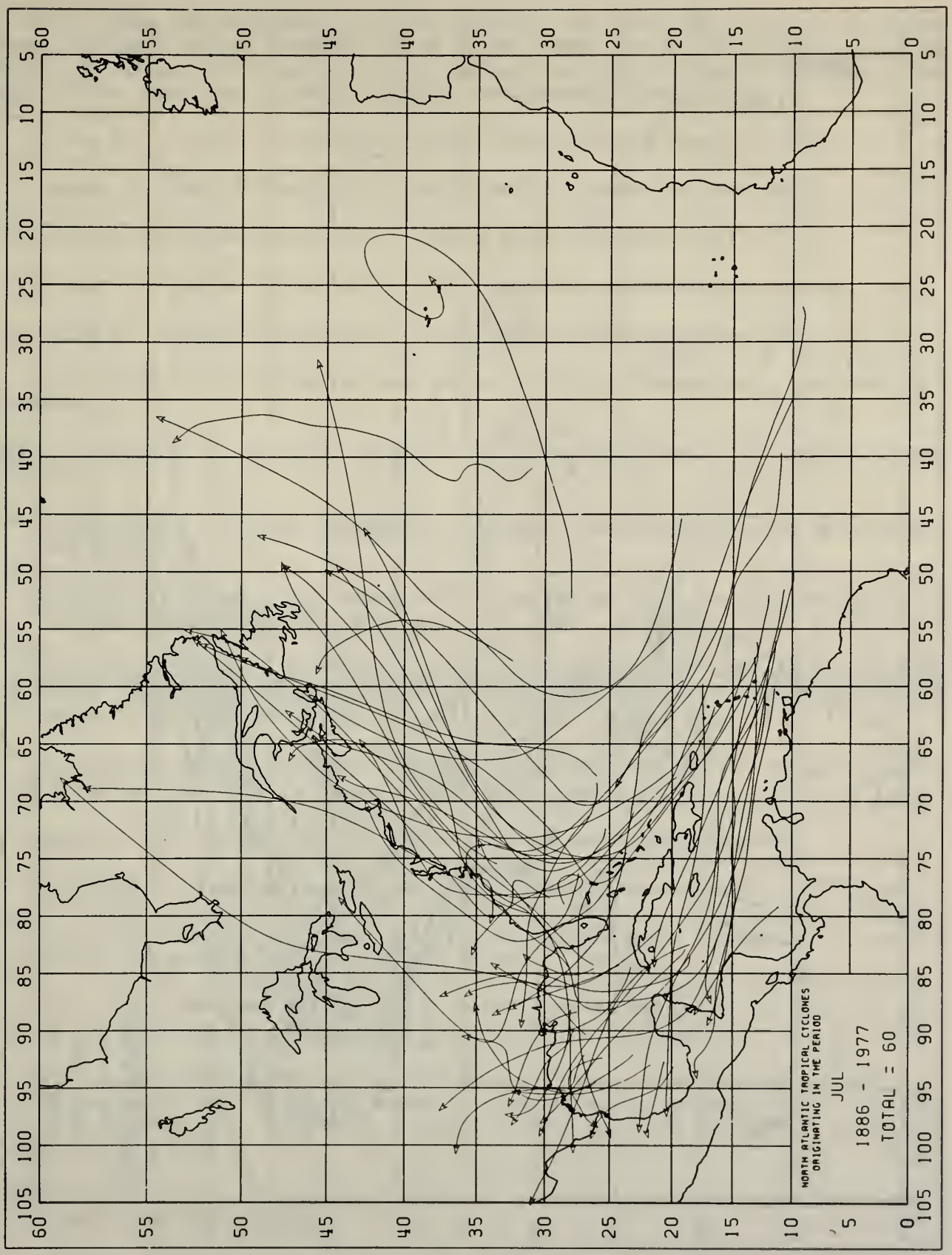
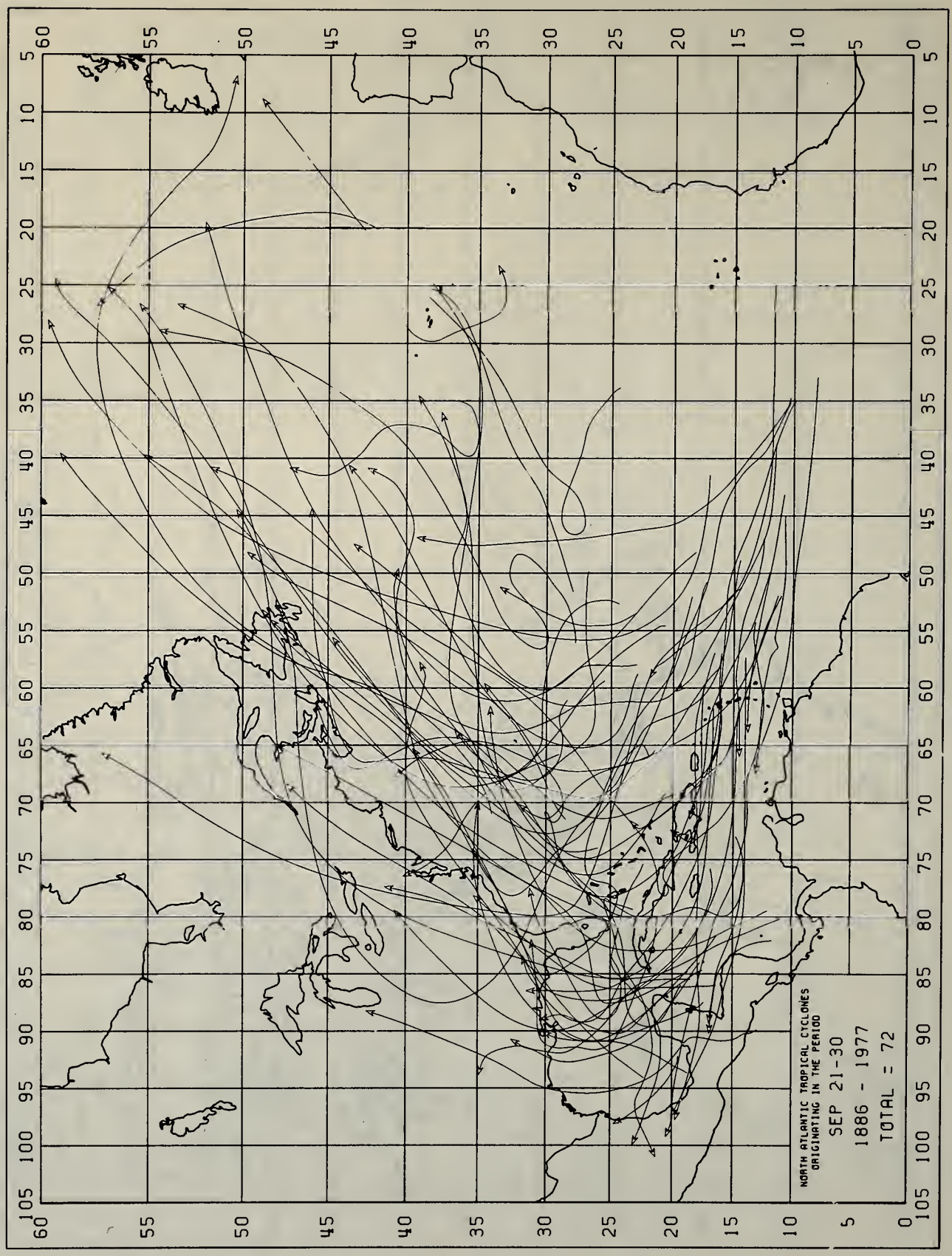

NORTH ATLANTIC TROPICAL CYCLONES
ORIGINATING IN THE PERIOD
JUL
1886 - 1977
TOTAL = 60

EXHIBIT 79


NORTH ATLANTIC TROPICAL CYCLONES
ORIGINATING IN THE PERIOD
SEP 21-30
1886 - 1977
TOTAL = 72

U.S. NAVY MARINE CLIMATIC ATLAS OF THE WORLD

This Atlas is published in five volumes. It is a revision of the eight volume U.S. NAVY MARINE CLIMATIC ATLAS OF THE WORLD that was published during the years 1955 through 1969 and which is now out of print. The 5 volumes of the revised Atlas published by the U.S. Naval Oceanography Command are:

Volume I (NAVAIR 50-1C-528) - NORTH ATLANTIC OCEAN (Revised 1974)

Volume II (NAVAIR 50-1C-529) - NORTH PACIFIC OCEAN (Revised 1977)

Volume III (NAVAIR 50-1C-530) - INDIAN OCEAN (Revised 1976)

Volume IV (NAVAIR 50-1C-531) - SOUTH ATLANTIC OCEAN (Revised 1978)

Volume V (NAVAIR 50-1C-532) - SOUTH PACIFIC OCEAN (Revised 1979)

Each volume is presented in two parts: PART I - Meteorology, and PART II - Oceanography

PART I - Meteorology presents isopleth analyses, by months, for the following elements.

Surface Winds (percent frequency of speeds less than 11 knots and greater than 33 knots)

Surface Air Temperature (mean air temperature and percent frequency of freezing temperatures and temperatures of 20°C and higher)

Temperature Extremes and Temperature - Humidity Index (99% and 1% quantile values for maximum and minimum temperatures, respectively, and percent frequency of temperature-humidity index values greater than 23°C)

Sea Surface Temperature (mean temperature and the 99% and 1% quantile values for maximum and minimum temperature, respectively)

Humidity (99% and 1% quantile values for dew point temperatures)

Precipitation (percent frequency of precipitation and of snow)

Visibility (percent frequency of visibility less than 2 nautical miles and equal to or greater than 5 nautical miles)

Cloud Cover (percent frequency of total cloud amount equal to or less than 2/8 and equal to or greater than 5/8 for low cloud amount)

Ceiling and Visibility (percent frequency of low cloud ceiling equal to or greater than 1000 feet and visibility equal to or greater than 5 nautical miles, and percent frequency of ceiling less than 600 ft and/or visibility less than 2 n mi.)

Wind-Visibility - Cloudiness (percent frequency for two specified conditions: poor and optimum)

Sea Level Pressure and Mean Wind (mean sea level pressure in millibars and scalar mean winds)

Waves (percent frequency of wave heights of less than 1.5 and 2.5 meters and greater than 3.5 and 6.0 meters)

Each of the above isopleth analyses is supplemented with graphical presentations and tabular data for selected areas in the ocean basin. Two additional charts are presented for each month: Low Pressure Centers depict the mean storm tracks and principal areas of cyclogenesis; Tropical Cyclone presents eight point tropical cyclone movement roses for each five degree latitude-longitude quadrangle in the ocean basin.

PART II - Oceanography presents monthly charts of sea ice concentrations and extremes, seasonal charts of surface currents, types of tides, and tide ranges. Also included are summaries of ice freezeup and breakup dates where appropriate.

The isopleth analyses are multi-color.

Individual volumes or the complete 5 volume set may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. The GPO Stock Numbers are:

Volume I	: 008-042-00064-1
Volume II	: 008-042-00068-3
Volume III	: 008-042-00066-7
Volume IV	: 008-042-00069-1
Volume V	: To be assigned

PART III

DECENNIAL AND INTERMITTENT PUBLICATIONS

III

CLIMATIC SUMMARY OF THE UNITED STATES (1930 Edition)

This summary was issued for each of the 105 climatological sections as shown in Exhibit 80, and for Puerto Rico and the U.S. Virgin Islands. Alaska and Hawaii were not included in this edition. However, a SUMMARY OF THE CLIMATOLOGICAL DATA OF ALASKA, published in 3 sections and containing data up to 1921 was issued in 1925; similarly, an issue was published for Hawaii with data through 1918, but the sections were not numbered. This is the third edition of what is commonly referred to as BULLETIN W and which contains basic climatological data for many stations throughout the country. The first issue, titled SUMMARY OF CLIMATOLOGICAL DATA FOR THE UNITED STATES, contains data from the beginning of record through 1908 and 1909. The second edition contained data generally through 1920 although a number of the sections covered varying periods through 1921 to 1923.

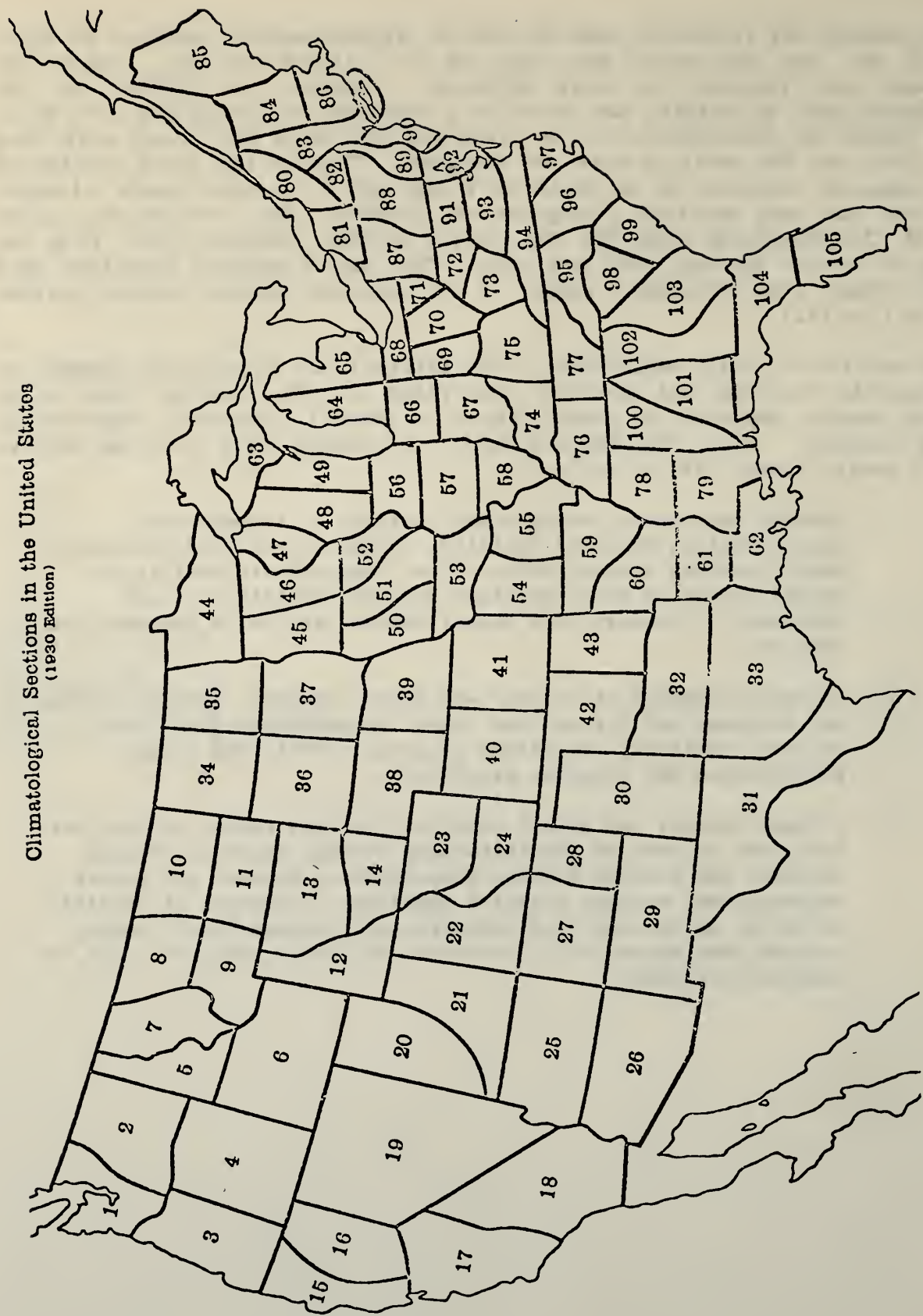
Each section of this publication (1930 edition) has a narrative summary of the topographic features and climatic conditions of the section, the latter containing special emphasis on precipitation in general, snowfall, temperature, wind, and humidity. Also included are tables presenting data covering varying periods of years through 1930 as follows:

1. Monthly and annual averages and extremes of temperature, precipitation, relative humidity, sunshine, and wind; excessive short-duration precipitation. Also included are monthly and annual values of short-duration maximum precipitation and greatest in 24-hours, and miscellaneous data for a few selected stations.

2. Sequential tables of monthly and annual average, average maximum and minimum, and highest and lowest temperatures for a few selected stations; and values of total monthly and annual precipitaion for numerous stations.

3. Average monthly and annual snowfall; average number of days with 0.01 inch or more of precipitation; average monthly, average maximum, and average minimum temperatures; highest and lowest temperatures; average relative humidity; percentage of possible sunshine; prevailing wind direction and average hourly speed; maximum wind speed (with direction and date); and frost data for numerous stations.

EXHIBIT 80


Climatological Sections in the United States
(1930 Edition)

CLIMATIC SUMMARY OF THE UNITED STATES - SUPPLEMENT FOR 1931 THROUGH 1952

This supplement was issued for each state or combination of States. The State combinations are Maryland-Delaware and New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont). It is a supplement to previous editions of the CLIMATIC SUMMARY OF THE UNITED STATES. It presents, by stations, sequential tables of monthly and annual values of total precipitation; and tables showing the mean monthly and annual snowfall, mean temperatures, mean maximum and minimum temperatures, and highest and lowest temperatures. Also included is a "Station Index and History" table which furnishes pertinent non-climatological facts about the stations included in the tabulations. The issue for Alaska contains data for the period 1922 through 1952; the issue for Hawaii contains data for the period 1919 through 1952.

CLIMATIC SUMMARY OF THE UNITED STATES - SUPPLEMENT FOR 1951 THROUGH 1960

This supplement was issued for each State or combinations of States. These combinations are Maryland-Delaware, Hawaii-Pacific, Puerto Rico and U.S. Virgin Islands, and New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont). The supplement is an update to previous editions or supplements of the CLIMATIC SUMMARY OF THE UNITED STATES. It presents by stations: sequential tables of monthly and annual total precipitation (Exhibit 81); sequential tables of monthly and annual total snowfall (Exhibit 82); mean number of days with precipitation equal to or greater than 0.10 and equal to or greater than 0.50 inch (Exhibit 83); sequential tables of mean monthly and annual temperature (Exhibit 84); mean daily maximum temperature (Exhibit 85); mean daily minimum temperature (Exhibit 86); highest temperature (Exhibit 87); lowest temperature (Exhibit 88); mean number of days with temperature equal to or greater than 90°F and equal to or less than 32°F (Exhibit 89); mean monthly and annual evaporation (Exhibit 90); and a station index and history (Exhibit 91). The means and extremes in the tables listed above are for the 10-year period 1951-1960 as well as for the entire period of record through 1960.

Data for stations reporting hourly precipitation are also shown. There are sequential tables by station for total monthly and annual precipitation (Exhibit 92) and a station index and history (Exhibit 93).

UNPUBLISHED DATA COMPILATIONS. Although there have been no supplements to the CLIMATIC SUMMARY OF THE UNITED STATES published since the 1951-1960 edition, sequential tables of monthly and annual values of average maximum, average minimum, and average temperatures and total precipitation have been compiled for the period 1941-1976 for many stations. Also included in these compilations are sequential tables of the monthly and annual highest and lowest observed daily temperatures for the 46 year period 1931-1976. These compilations may not be serially complete; they will be subjected to a further review for accuracy when a new set of climatological normals, based upon the 30-year period 1951-1980, is prepared in 1981. All these unpublished compilations have been filmed, and can be supplied as paper copy or on microfiche. A list of stations for which these compilations were made is also available from the National Climatic Center, Federal Building, Asheville, NC 28801.

EXHIBIT 81

TOTAL PRECIPITATION

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
						BLACK ROCK							
1951	5.88	6.70	.67	6.03	1.63	5.22	4.01	4.69	3.98	4.24	10.25	3.93	57.23
1952	5.77	3.89	3.69	3.63	3.38	.70	1.65	1.57	2.78	1.22	7.16	3.90	39.34
1953	3.79	3.08	8.03	5.05	3.96	1.64	1.32	.50	.44	1.10	1.31	2.29	32.51
1954	4.46	2.63	3.47	2.05	6.03	2.79	1.89	1.35	2.03	2.78	1.09	5.48	36.05
1955	.87	2.59	4.31	4.31	7.54	3.05	2.29	.60	1.28	4.88	1.23	.49	33.44
1956	3.04	10.32	1.78	2.99	4.04	4.96	2.69	2.56	.60	2.11	6.21	2.17	43.47
1957	6.99	4.37	1.62	11.71	6.67	3.40	3.40	4.73	2.66	4.24	10.69	3.84	64.32
1958	2.46	1.37	6.75	3.56	5.99	4.58	6.64	4.57	7.36	.77	5.47	.61	50.13
1959	2.72	3.45	2.89	1.37	2.78	3.85	3.60	3.66	4.55	4.29	4.64	5.59	43.39
1960	3.32	2.11 E	2.77	.92	9.20	5.27	4.44	1.86	1.92	2.03	3.87	3.58	41.29
PERIOD	3.93	4.05	3.60	4.16	5.12	3.55	3.19	2.61	2.76	2.77	5.19	3.19	44.12
YEARS	10	10	10	10	10	10	10	10	10	10	10	10	
RECORD	4.25	3.48	4.22	4.85	4.90	3.85	3.53	3.74	3.35	3.27	4.29	3.75	47.48
YEARS	58	58	58	58	58	58	58	59	59	60	60	60	
NORMAL	3.97	3.89	4.28	4.20	4.65	3.83	3.42	3.10	2.99	3.20	4.42	3.78	45.73
						BLAKELY MOUNTAIN DAM							
1953	-	-	-	-	-	-	6.46	2.79	2.20	2.00	2.62	2.59	-
1954	4.77	1.67	1.32	2.80	8.44	1.59	1.54	1.09	2.71	8.84	1.32	4.20	40.29
1955	1.52	3.61	5.33	2.33	9.87	1.44	4.17	4.83	5.37	3.23	1.57	1.10	44.37
1956	4.56	11.04	2.82	5.01	2.70	1.84	3.54	1.24	1.03	2.36	3.82	1.40	41.36
1957	8.27	3.49	6.38	16.15	9.55	3.76	3.06	4.96	4.35	4.14	5.78	3.30	73.19
1958	3.38	1.12	5.42	6.61	7.51	5.63	6.66	3.13	4.82	4.63	7.24	.75	56.90
1959	2.85	6.83	4.11	2.93	2.46	8.32	6.12	1.25	4.25	2.17	2.53	10.13	53.95
1960	5.12	3.13	3.15	1.79	9.08	7.53	2.63	2.37	5.70	2.97	4.67	6.92	55.06
PERIOD	4.35	4.41	4.08	5.37	7.09	4.30	4.27	2.71	3.80	3.79	3.69	3.80	51.66
YEARS	7	7	7	7	7	7	8	8	8	8	8	8	

EXHIBIT 82

TOTAL SNOWFALL

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
						BATESVILLE L AND D NO 1							
1951	T	5.0	-	.0	.0	.0	.0	.0	.0	-	-	.0	-
1952	.0	6.0	.0	.0	.0	T	.0	.0	.0	.0	-	T	-
1953	.0	.0	T	.0	.0	.0	.0	.0	.0	.0	.0	T	T
1954	4.8	.0	T	.0	.0	.0	.0	.0	.0	.0	.0	T	4.8
1955	-	T	T	.0	.0	.0	.0	.0	.0	.0	.0	.0	-
1956	9.3	T	T	.0	.0	.0	.0	.0	.0	.0	T	.0	9.3
1957	T	.0	T	T	.0	.0	.0	.0	.0	.0	T	T	T
1958	T	3.6	3.0	.0	.0	.0	.0	.0	.0	.0	2.0	4.0	12.6
1959	.3	1.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.3
1960	-	5.0	-	.0	.0	.0	.0	.0	.0	.0	.0	T	-
PERIOD	1.8	2.1	.4	T	.0	T	.0	.0	.0	.0	.3	.4	5.0
YEARS	8	10	8	10	10	10	10	10	10	9	8	10	
RECORD	2.6	2.5	.4	T	.0	T	.0	.0	.0	.0	.1	1.3	6.9
YEARS	44	46	44	46	46	46	46	46	46	45	44	46	

EXHIBIT 83

MEAN NUMBER OF DAYS WITH PRECIPITATION ≥ 0.10 OR ≥ 0.50 INCH

STATION		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
CAMDEN 1	D.1D	7	7	7	8	7	5	4	5	5	4	6	6	71
	YEARS	7	7	7	6	7	7	7	7	7	7	7	7	
	0.5D	4	3	3	4	4	2	3	2	3	2	4	3	37
	YEARS	10	10	10	10	10	10	10	10	10	9	10	10	
CAMP CHAFFEE	D.10	4	5	7	9	8	6	5	4	4	3	5	3	63
	YEARS	5	6	6	5	5	5	5	5	5	5	5	5	
	0.5D	2	2	3	5	4	2	3	3	2	1	3	1	31
	YEARS	9	8	9	8	8	8	8	8	8	8	8	8	
CARLISLE 1 SW	0.1D	6	6	7	8	6	5	5	4	4	5	4	5	65
	YEARS	6	7	6	5	6	7	6	7	7	6	7	7	
	D.5D	4	3	3	4	3	3	2	2	2	2	3	3	34
	YEARS	8	9	8	7	8	10	8	8	9	9	10	10	
CLARENODN	0.1D	7	7	7	8	6	5	6	4	4	5	6	6	71
	YEARS	6	7	7	7	7	7	7	7	7	7	7	7	
	D.5D	3	4	4	4	3	3	3	2	2	2	3	3	36
	YEARS	10	10	10	10	10	10	10	10	10	10	10	10	

EXHIBIT 84

MEAN TEMPERATURE

BOONEVILLE

1951	41.4	46.0	51.6	59.4	68.8	75.7	81.4	82.4	73.4	63.6	46.4	43.8	61.2
1952	48.4	49.6	51.2	58.2	68.5	81.8	83.1	82.6	74.0	57.7	51.2	42.7	62.4
1953	45.3	46.5	57.1	57.5	70.5	85.0	80.9	80.1	74.9	65.6	50.2	42.3	63.0
1954	40.7	51.1	51.0	67.4	64.7	79.8	86.5	87.7	79.4	65.5	51.5	44.2	64.1
1955	42.5	43.9	53.2	66.2	72.6	74.5	84.1	81.3	77.8	62.8	50.2	42.1	62.6
1956	38.6	46.5	52.8	59.8	74.2	77.5	83.7	84.1	74.6	68.1	49.4	47.4M	63.1
1957	40.6	50.9	50.0	62.2	71.7	77.5	83.2	79.4	70.8	59.8	50.1M	48.0	62.0
1958	39.9	39.6	45.9	61.3	70.4	76.8	80.9	80.3	75.2	59.5M	-	40.1	-
1959	39.4	44.6	52.2	60.8	73.0	76.2	79.1	80.3	74.6	61.6	46.2	45.6	61.1
1960	39.7M	39.0	42.0	64.1	67.4	77.0M	80.1	80.8	76.7	65.9	53.1	39.8	60.5
PERIOD	41.7	45.8	50.7	61.7	70.2	78.2	82.3	81.9	75.1	63.0	49.8	43.6	62.0
YEARS	10	10	10	10	10	10	10	10	10	10	9	10	
RECORD	42.1	45.9	50.6	61.5	70.1	78.0	81.8	81.3	74.2	63.1	49.9	43.3	61.8
YEARS	11	11	11	11	11	11	11	11	12	12	11	12	
NORMAL	41.8	45.2	52.1	62.2	69.8	78.1	82.4	82.0	75.0	64.2	51.0	43.9	62.3

EXHIBIT 85

MEAN DAILY MAXIMUM TEMPERATURE

STATION	NO. OF YEARS		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
ALUM FORK	PER	10	53.4	57.1	63.2	74.4	81.8	89.1	92.8	93.5	87.8	76.4	63.2	55.2	74.0
	REC	22	52.6	56.6	63.9	74.3	81.0	88.6	92.3	92.6	87.0	77.4	63.3	55.0	73.7
ARKADELPHIA	PER	9	55.9	60.1	65.8	76.3	83.5	90.8	94.2	96.0	90.2	78.3	64.9	57.2	76.1
	REC	33	55.3	58.4	67.5	75.7	83.2	90.0	93.4	93.5	88.8	78.4	65.8	56.3	75.5
ASHDOWN	PER	8	56.8	60.5	66.6	76.3	83.5	91.5	95.6	95.4	89.6	77.8	65.1	57.7	76.4
	REC	12	55.7	59.5	66.7	76.3	82.8	90.6	94.1	94.3	88.3	78.0	65.2	57.7	75.8
BALD KNOB	PER	9	51.7	55.5	61.6	73.2	81.1	88.9	92.7	92.6	86.8	75.6	62.2	53.7	73.0
	REC	10	51.7	55.7	61.5	73.0	81.0	88.7	92.2	92.0	86.1	75.8	62.0	53.3	72.8
BATESVILLE LIVESTOCK	PER	10	49.7	53.4	59.6	71.9	80.6	89.3	93.5	94.0	88.0	76.0	61.4	52.2	72.5
	REC	18	49.5	53.2	60.5	72.0	79.5	88.1	92.7	93.0	86.5	76.1	61.5	51.3	72.0

EXHIBIT 86

MEAN DAILY MINIMUM TEMPERATURE

ARKANSAS

STATION	NO. OF YEARS		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
ALUM FORK	PER	9	31.5	34.7	38.6	48.3	58.3	65.4	69.2	68.5	61.1	50.1	37.8	33.3	49.7
	REC	21	30.9	33.8	39.0	48.8	57.5	65.2	68.4	67.8	60.8	50.6	38.6	33.0	49.5
ARKADELPHIA	PER	9	33.7	36.9	40.3	50.5	59.1	67.1	70.8	69.7	61.9	50.8	38.9	34.6	51.2
	REC	33	32.5	34.6	41.9	50.2	58.4	66.7	69.8	69.2	62.5	50.4	39.5	33.7	50.8
ASHDOWN	PER	8	34.1	37.1	40.9	50.9	59.4	66.4	70.9	69.0	61.8	49.6	38.2	34.2	51.0
	REC	13	33.8	35.7	41.4	51.3	59.2	66.4	69.8	68.6	61.4	50.3	38.0	33.5	50.8
BALD KNOB	PER	9	30.2	34.0	38.5	49.1	57.5	64.9	68.1	66.9	58.7	47.2	35.5	31.6	48.5
	REC	10	30.2	34.1	38.4	48.7	57.7	65.0	67.9	66.7	58.9	47.6	35.3	31.1	48.5

EXHIBIT 87

HIGHEST TEMPERATURE

STATION	NO. OF YEARS		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
GILBERT	PER	9	80	82	87	94	94	105	114	109	107	97	84	82	114
	REC	22	82	82	87	94	94	108	114	113	107	97	87	82	114
GRAVETTE	PER	9	77	82	84	89	99	103	113	107	104	97	81	77	113
	REC	60	77	82	92	92	99	106	114	113	106	97	86	77	114
HARRISON	PER	9	78	82	86	92	94	102	110	105	103	96	85	82	110
	REC	57	81	87	98	99	99	105	112	112	106	96	86	82	112
HELENA	PER	8	78	80	84	89	97	106	105	105	104	94	85	79	106
	REC	60	78	82	92	98	103	108	111	109	113	99	90	81	113

EXHIBIT 88

LOWEST TEMPERATURE

ARKANSAS

STATION	NO. OF YEARS		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
GILBERT	PER	9	- 1	-23	10	21	32	44	49	45	32	15	6	- 2	- 23
	REC	23	-20	-23	2	20	32	44	46	44	31	15	3	- 4	- 23
GRAVETTE	PER	9	- 8	-13	2	16	28	43	49	45	37	18	4	- 4	- 13
	REC	60	-24	-29	-14	15	24	39	44	42	28	12	4	-21	- 29
HARRISON	PER	9	0	-14	8	20	30	43	51	45	34	20	8	- 1	- 14
	REC	56	-18	-17	-10	20	28	42	41	41	30	17	5	- 6	- 18
HELENA	PER	9	11	- 3	16	32	42	52	61	57	48	29	20	13	- 3
	REC	60	- 9	- 7	11	27	38	46	52	48	37	25	12	8	- 9
HOPE 3 NE	PER	8	11	- 4	19	30	39	50	60	53	45	25	15	10	- 4
	REC	77	- 8	-10	9	27	38	45	53	52	34	25	15	8	- 10

EXHIBIT 89

MEAN NUMBER OF DAYS WITH TEMPERATURE ≥90° OR ≤32°

STATION		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
STUTTGART	90	0	0	0	1	7	19	26	26	15	3	0	0	97
	YEARS	10	10	10	10	10	9	10	10	10	10	10	10	
	32	15	9	6	+	0	0	0	0	0	1	8	13	52
	YEARS	10	10	10	10	10	10	10	10	10	10	10	10	
STUTTGART 9 ESE	90	0	0	0	0	3	15	22	23	11	2	0	0	76
	YEARS	10	10	10	10	10	10	10	10	10	10	10	10	
	32	19	11	7	+	0	0	0	0	0	+	9	17	63
	YEARS	9	10	10	10	10	10	10	10	10	9	7	9	
SUBIACO	90	0	0	0	+	5	17	25	27	16	3	0	0	93
	YEARS	10	10	10	10	10	10	9	10	10	10	10	10	
	32	19	13	8	1	0	0	0	0	0	1	11	17	70
	YEARS	10	10	10	8	10	10	10	10	10	10	10	10	
TEXARKANA W8 AIRPORT	90	0	0	0	0	4	19	26	25	16	2	0	0	92
	YEARS	10	10	10	10	10	10	10	10	10	10	10	10	
	32	12	7	4	0	0	0	0	0	0	+	6	10	39
	YEARS	10	10	10	10	10	10	10	10	10	10	10	10	
WALDRON	90	0	0	0	1	5	19	28	27	18	2	0	0	100
	YEARS	10	10	10	10	10	10	10	10	10	10	10	10	
	32	21	15	11	3	+	0	0	0	0	4	15	20	89
	YEARS	9	10	10	10	10	10	10	10	10	10	10	10	

EXHIBIT 90

MEAN EVAPORATION

STATION		JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
BLAKELY MOUNTAIN DAM	MEAN	1.33	1.96	3.39	4.68	5.82	6.49	7.38	7.10	5.56	3.50	2.27	1.55	51.03
	YEARS	6	5	6	7	7	7	7	8	8	8	7	5	
HOPE 3 NE	MEAN	2.28	2.56	4.32	5.36	6.30	6.91	7.69	7.32	5.77	4.51	2.70	1.93	57.65
	YEARS	18	20	22	23	22	24	23	23	22	22	20	20	
MOUNTAIN HOME	MEAN	-	-	-	5.44	6.16	6.97	4.46	7.25	6.21	3.83	-	-	-
	YEARS				8	8	8	8	8	8	7			
NARROWS OAM	MEAN	1.57	2.19	3.56	5.06	6.14	7.55	7.88	7.62	6.22	4.14	2.44	1.56	55.93
	YEARS	8	7	7	9	9	9	9	9	9	9	8	8	
NIMROD OAM	MEAN	-	1.98	3.23	4.94	5.94	6.99	7.21	6.76	5.36	3.65	2.37	-	-
	YEARS		5	7	14	17	17	17	17	17	18	13		
RUSSELLVILLE	MEAN	1.68	2.18	3.73	5.09	6.23	6.99	7.66	7.17	5.52	3.80	1.99	1.31	53.35
	YEARS	10	13	19	19	20	22	21	19	21	21	20	16	
STUTTGART 9 ESE	MEAN	1.29	1.74	3.30	4.53	5.78	6.79	6.85	6.54	5.01	3.47	2.10	1.30	48.70
	YEARS	21	22	29	30	30	29	30	30	29	30	28	23	

EXHIBIT 91

STATION INDEX AND HISTORY

ARKANSAS

Station	County	Index number	Latitude N.	Longitude W.	Elevation	Distance and dir. from post office	Distance and direction from previous location	Record begins: Temp. Year	Record begins: Temp. Month	Record begins: Precip. Year	Record begins: Precip. Month	Record ends: Temp. Year	Record ends: Temp. Month	Record ends: Precip. Year	Record ends: Precip. Month	Type of change	Refer to station number	Remarks
Hope 3 NE	Hempstead	3428	33 43	93 33	375	3NE		C		C								Known as Hope prior to Feb. 1958
Hopper	Montgomery	3438	34 22	93 41	700	0				C								
Horatio	Sevier	3442	33 56	94 22	337	0				C								
Hot Springe 1 NNE	Garland	3486	34 31	93 03	710	1NNE		C		C								
Huttig Dam	Union	3556	33 02	92 05	60	B				C								5 SE Feleenthal
Index	Little River	3584	33 35	94 03	300	B				C								3 S Ogden
Jaeper	Newton	3600	36 01	93 11	857	0				C								
Jessieville	Garland	3704	34 42	93 04	730	1N				C								
Joneseboro	Craighead	3734	35 50	90 42	345	0		C		C								
Keo	Lonoke	3862	34 36	92 00	230	0		C		C								
Lake City	Craighead	3998	35 49	90 26	230	0				C								
Langley	Pike	4060	34 19	93 51	798	0				C								
Lead Hill	Boone	4106	38 24	92 54	710	1SSE		C		C								No change in location. Poet Office moved April 1959
Lee Creek Guard Station	Crawford	4116	35 42	94 19	1000	2NE				C				1959	Nov	3		Known ae Lee Creek prior to June 1953
Lee Creek Guard Station	Crawford	4118	35 42	94 18	1665	4NE	2E			1959	Dec			1980	Jan	3		
Lee Creek Guard Station	Crawford	4118	35 42	94 19	1000	2NE	2W			1960	Jan							
Leola	Grant	4134	34 10	92 35	261	0				C								

TOTAL PRECIPITATION

STATIONS EQUIPPED WITH RECORDING RAIN GAGES ONLY

ARKANSAS

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
						KINGSLAND 3 SSE							
1951	7.90	-	-	5.15	2.13	5.48	4.05	.33	4.22	2.47	3.64	6.23	-
1952	4.28	4.02	5.03	3.63	4.62	.00	1.99	2.09	-	.38	7.73	4.25	-
1953	E 4.15	3.88	8.15	6.68	10.74	.71	4.83	1.33	1.05	1.43	2.88	4.97	50.80
1954	E 8.26	1.31	1.43	E 4.91	4.10	E .37	E 1.96	.57	E 2.28	E 1.92	2.37	5.63	35.11
1955	2.60	5.65	4.55	5.80	4.76	.90	E 1.22	4.88	E 3.04	2.10	1.76	2.15	39.41
1956	3.28	9.41	E 3.12	3.86	1.98	3.11	3.47	5.18	.56	3.11	5.35	E 2.15	44.58
1957	6.44	3.93	5.11	10.53	3.52	2.87	4.60	.61	8.45	4.98	9.01	3.86	63.91
1958	3.41	2.07	4.28	10.05	9.86	7.73	3.29	4.84	E 7.94	.39	4.22	1.08	59.16
1959	2.65	4.47	3.61	E 4.38	2.46	4.09	3.95	E 3.12	E 2.83	E 2.27	2.47	E 5.45	41.75
1960	E 3.60	4.40	4.53	1.67	3.68	4.72	E .95	E 5.73	1.25	E 4.77	E 2.59	E 7.39	-
MEAN	4.66	4.35	4.42	5.67	4.79	3.00	3.03	2.87	3.51	2.38	4.20	4.32	47.20
YEARS	10	9	9	10	10	10	10	10	9	10	10	10	

YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	ANN
						MONTROSE							
1951	-	-	-	-	-	6.07	3.80	.31	-	2.41	2.56	7.90	-
1952	4.07	3.77	3.66	-	1.71	.00	-	4.06	1.76	-	2.32	3.77	-
1953	2.30	6.68	5.35	7.07	8.46	1.33	4.17	.09	1.03	1.08	3.31	7.15	48.02
1954	7.11	2.29	2.55	6.03	7.13	.52	3.01	.16	E 1.63	2.20	4.09	1.79	38.51
1955	3.90	6.10	6.49	4.34	5.50	3.36	7.14	2.66	.90	2.15	2.09	3.35	47.98
1956	3.43	9.75	5.32	6.87	2.68	2.84	E 4.57	1.86	.79	3.02	5.01	2.90	49.04
1957	9.18	4.74	5.27	6.11	3.37	8.25	5.83	1.87	4.06	4.80	11.56	2.91	67.95
1958	3.89	2.59	4.76	12.14	8.74	7.37	4.52	4.74	14.79	.38	3.20	E 1.19	68.31
1959	2.47	5.21	4.24	4.44	2.96	3.28	3.50	3.79	.46	3.13	3.04	3.61	40.13
1960	3.99	2.84	4.68	2.94	2.83	3.54	E 1.42	6.12	1.05	3.40	2.90	6.16	41.87
MEAN	4.48	4.89	4.70	6.24	4.82	3.66	4.22	2.57	2.94	2.51	4.01	4.07	49.11
YEARS	9	9	9	8	9	10	9	10	9	9	10	10	

STATION INDEX AND HISTORY

STATIONS EQUIPPED WITH RECORDING RAIN GAGES ONLY

ARKANSAS

Station	County	Index number	Latitude N.	Longitude W.	Elevation	Distance and dir. from post office	Distance and direction from previous location	Record begins				Record ends				Type of change	Refer to station number	Remarks
								Temp.		Precip.		Temp.		Precip.				
								Year	Month	Year	Month	Year	Month	Year	Month			
Appleton	Pope	0196	35 25	92 53	522	0				C								
Blue Mountain Dam	Yell	0798	35 06	93 39	455	2SW				C								
Botkinburg 2 S	Van Buren	0842	35 39	92 28	1200	2S				C								
Bull Shoals Dam	Baxter	1020	36 22	92 34	760	B				C				1953	May	3		14 NW Mountain Home
Bull Shoals Dam	Baxter	1020	36 22	92 34	480	B	0			1953	May							14 NW Mountain Home
Camden 2	Ouachita	1154	33 35	92 51	155	1W				C								
Canaan 2 W	Searcy	1188	35 52	92 44	800	2W				C				1956	Oct	1		
Carpenter Dam	Garland	1238	34 27	93 01	405	3SSE				C								
Clarksville 3 SE	Johnson	1456	35 26	93 25	550	3SE				C				1953	Oct	3	4019	

This 4-page publication series, commonly referred to as SUBSTATION SUMMARIES, presents temperature and precipitation means and extremes data (Exhibit 94), freeze and precipitation probability statistics (Exhibits 95 and 96), sequential tables of monthly and annual mean maximum, mean minimum, and average temperature (Exhibit 97), sequential tables of monthly and annual total precipitation and total snowfall (Exhibit 98), and the monthly and annual normals for average temperature, total precipitation, total heating-degree days, and total cooling-degree days (Exhibit 99). Each summary is based upon the period of record beginning in 1951 through 1970, or through the latest complete year of record (1971, 1972, 1973, 1974 or 1975) available at the time the summary was prepared. These summaries are available for 1,063 Cooperative Climatological Stations in the 50 States and Puerto Rico.

Similar summaries that also contain a narrative description of the local climate and station history information are available for nearly 1,800 additional stations. Those summaries usually are based upon earlier and generally longer periods of record and, in general, do not contain sequential tables of monthly and annual mean maximum and minimum temperatures, monthly and annual normals, or freeze and precipitation probability statistics.

EXHIBIT 94

LATITUDE N31 32
LONGITUDE W84 08

CLIMATOLOGICAL SUMMARY

MEANS AND EXTREMES FOR PERIOD 1951-1975

ALBANY 3 SE, GA
ELEVATION 180

MONTH	TEMPERATURE (°F) MEANS: DAILY MAXIMUM	DAILY MINIMUM	MONTHLY	EXTREMES: RECORD HIGHEST	YEAR	DAY	RECORD LOWEST	YEAR	DAY	MEAN NUMBER OF DAYS: MAX. 90° AND ABOVE	MAX. 32° AND BELOW	MIN. 32° AND BELOW	MIN. 0° AND BELOW	PRECIPITATION TOTALS (INCHES): MEAN	GREATEST MONTHLY	YEAR	GREATEST DAILY	YEAR	DAY	SNOW, SLEET: MEAN	MAXIMUM MONTHLY	YEAR	GREATEST DEPTH	YEAR	DAY	MEAN NUMBER OF DAYS: .10 or MORE	.50 or MORE	1.00 or MORE
JAN	61.6	38.0	49.8	82+	75	31	6	66	31	0	0	11	0	4.34	11.94	64	2.75	73	1	.0						7	3	1
FEB	63.9	39.5	51.7	85+	62	27	11	66	1	0	0	8	0	4.89	9.36	74	3.25	74	7	.1	3.0	73	3.0	73	15	7	3	1
MAR	70.8	45.4	58.1	90+	55	12	21+	68	4	0	0	4	0	4.90	9.09	71	3.32	59	6	.0						7	3	1
APR	79.2	53.3	66.3	93	67	30	30+	71	3	1	0	0	0	4.60	9.41	73	3.55	75	10	.0						6	3	2
MAY	86.1	61.0	73.6	102	62	20	39+	71	5	10	0	0	0	3.91	6.97	66	2.88	58	20	.0						6	3	1
JUN	90.6	67.8	79.2	105	52	28	49	56	3	19	0	0	0	4.85	11.17	65	3.04	72	20	.0						8	4	2
JULY	92.0	70.6	81.3	103	52	25	57	67	16	23	0	0	0	5.84	9.98	55	3.66	56	16	.0						9	4	2
AUG	92.2	70.2	81.2	103+	54	18	57	67	15	23	0	0	0	3.97	8.73	61	3.88	54	8	.0						7	2	1
SEPT	88.5	65.9	77.2	101+	57	2	37	67	30	15	0	0	0	4.05	10.09	53	3.98	56	25	.0						5	2	1
OCT	80.3	54.2	67.3	98	54	6	29+	68	28	2	0	1	0	1.85	6.90	59	3.05	59	30	.0						3	1	0
NOV	70.4	43.2	56.9	89+	61	4	14+	70	26	0	0	5	0	2.35	8.28	57	2.99	57	30	.0						4	2	1
DEC	63.2	38.2	50.7	83	71	17	6	62	13	0	0	11	0	3.93	9.99	53	2.58	61	13	.0						6	3	1
YEAR	78.2	53.9	66.1	105	JUN 52	28	6+	62	DEC 13	93	0	40	0	49.48	11.94	JAN 64	3.98	SEP 56	25	.1	3.0	FEB 73	3.0	FEB 73	10	75	33	14

+ ALSO ON EARLIER DATES

EXHIBIT 95

FREEZE PROBABILITIES

PROBABILITY OF LATER DATE IN SPRING (MO/DA) THAN INDICATED

TEMP	.10	.20	.30	.40	.50	.60	.70	.80	.90
32	4/ 1	3/25	3/20	3/16	3/12	3/ 8	3/ 4	2/27	2/20
28	3/31	3/19	3/10	3/ 3	2/24	2/17	2/ 9	1/31	1/19
24	3/17	3/ 5	2/25	2/18	2/11	2/ 4	1/27	1/18	1/ 3
20	2/17	2/ 8	2/ 1	1/25	1/19	1/12	1/ 3	0/ 0	0/ 0
16	2/ 1	1/23	1/14	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0

0/ 0 PROBABILITY OF OCCURRENCE OF THRESHOLD TEMP IS LESS THAN INDICATED PROBABILITY

PROBABILITY OF EARLIER DATE IN FALL (MO/DA) THAN INDICATED

TEMP	.10	.20	.30	.40	.50	.60	.70	.80	.90
32	10/25	11/ 1	11/ 5	11/ 9	11/13	11/16	11/20	11/25	12/ 1
28	11/ 7	11/13	11/18	11/22	11/26	11/29	12/ 3	12/ 8	12/14
24	11/12	11/21	11/28	12/ 4	12/ 9	12/15	12/21	12/28	1/ 9
20	11/30	12/10	12/17	12/24	12/30	1/ 6	1/16	0/ 0	0/ 0
16	12/24	1/ 8	1/25	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0	0/ 0

0/ 0 PROBABILITY OF OCCURRENCE OF THRESHOLD TEMP IS LESS THAN INDICATED PROBABILITY

PROBABILITY OF LONGER THAN INDICATED FREEZE FREE PERIOD (DAYS)

TEMP	.10	.20	.30	.40	.50	.60	.70	.80	.90
32	276	266	258	251	245	239	232	224	213
28	318	303	292	283	274	266	256	245	230
24	>365	329	314	304	295	286	278	268	254
20	>365	>365	>365	>365	340	330	322	313	303
16	>365	>365	>365	>365	>365	>365	>365	>365	345

EXHIBIT 96

PRECIPITATION WITH PROBABILITY EQUAL OR LESS THAN

LVL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0.05	1.04	1.48	1.21	1.00	0.95	2.15	2.76	1.17	0.89	0.00	0.43	1.37
0.10	1.44	1.93	1.66	1.41	1.20	2.59	3.27	1.53	1.26	0.14	0.64	1.73
0.20	2.07	2.62	2.37	2.08	1.77	3.19	3.96	2.10	1.85	0.49	0.98	2.26
0.30	2.63	3.21	3.00	2.69	2.29	3.68	4.52	2.59	2.39	0.79	1.30	2.71
0.40	3.19	3.79	3.62	3.30	2.90	4.14	5.04	3.06	2.92	1.10	1.62	3.14
0.50	3.78	4.38	4.28	3.94	3.35	4.60	5.57	3.55	3.49	1.44	1.97	3.58
0.60	4.45	5.05	5.02	4.68	3.98	5.09	6.12	4.10	4.13	1.83	2.37	4.07
0.70	5.20	5.78	5.86	5.53	4.70	5.65	6.75	4.71	4.87	2.32	2.84	4.60
0.80	6.20	6.74	6.96	6.65	5.45	6.37	7.55	5.51	5.85	2.94	3.46	5.28
0.90	7.91	8.36	8.84	8.56	7.26	7.45	8.75	6.87	7.52	4.03	4.52	6.46
0.95	9.29	9.64	10.37	10.15	8.61	8.43	9.83	7.93	8.90	5.02	5.43	7.33

EXHIBIT 97

STATION: 09 0140 — MAX TEMP — ALBANY 3 SE, GA

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
51	64.3	67.0	72.4	76.5	87.0	93.6	94.7	95.2	90.2	82.2	68.1	67.7M	79.9M
52	70.0	65.7	72.6	76.8	86.5	96.2	96.2	92.5	85.3	77.1	69.9	59.7	79.0
53	65.0	63.9	74.5	77.3	89.4	93.0	91.3	92.3	86.5	80.9	68.9	60.5	78.6
54	65.5	69.8M	70.5	83.0	82.1	94.3	96.3	96.9	94.2	83.3	68.1	61.2	80.4M
55	61.1	66.2	78.4	83.1	89.8	90.2	92.9	95.6	89.3	79.8	70.0	62.9	79.9
56	60.8	71.2	72.5	79.2	89.2	92.3	92.5	96.0	89.0	80.5	70.7	71.8	80.5
57	66.8	73.6	70.6	81.0	86.5	90.8	93.2	94.1	87.1	76.4	71.1	64.3	79.6
58	56.2	56.7	67.0	79.7	86.4	91.1	91.3	93.1	92.2	79.2	75.6	60.7	77.4
59	62.1	65.5	69.1	79.5	89.0	91.3	92.6	94.1	88.4	79.1	71.3	64.3	78.9
60	61.2	62.9	62.6	80.9	85.8	91.3	93.9	93.0	90.4	82.7	73.7	61.5	78.3
61	57.9	70.0	76.4	76.0	84.3	89.3	93.1	90.1	90.9	83.8	75.8	64.7	79.4
62	60.7	74.5	69.0	78.4	95.5	91.4	95.4	95.8	89.4	84.0	68.7	60.1	80.2
63	58.3	61.2	75.6	81.8	88.3	91.4	92.6	94.5	87.7M	81.1	69.4	55.4	78.1M
64	56.1E	57.8	70.1	77.9	84.7	91.2	87.8	88.4	87.2	74.6	72.3	63.6	76.0E
70	52.4	61.8	70.0	80.6	86.8	88.0	92.4	90.4	91.5	81.6	66.9	67.1	77.5
71	60.0	64.3	64.4	78.0	81.2	91.2	89.5	90.0	88.8	81.9	70.5	69.2	77.6
72	66.6	59.8	72.2	79.3	82.0	88.8	91.2	93.1	92.9M	80.0	66.7M	66.7	78.3M
73	59.4	59.3M	72.7	73.7	82.7	88.6	93.0	91.3	90.3	82.9	74.9	62.6	77.6M
74	72.0	64.0	74.5	77.2	85.8	87.9	89.0	86.1	83.0	78.5	70.8	61.8	77.6
75	64.7	66.5	69.4	75.3	86.5	88.5	84.0M	87.6	83.5	80.8	70.6M	61.0M	76.5M
SUM	1541.0	1597.1	1771.2	1978.8	2153.7	2264.5	2299.4	2304.3	2213.2	2008.2	1761.1	1578.8	1956.0

STATION: 09 0140 — MIN TEMP — ALBANY 3 SE, GA

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
51	40.0	43.0	50.4	54.7	61.2	71.1	73.1	73.4	70.1	60.2	44.6	47.0	57.4
52	48.1	67.3	48.3M	53.4	63.9	73.7	73.4	71.5	66.5	51.7	44.1	39.5	56.8M
53	42.2	43.0	49.8	51.7	67.4	71.6	72.2	71.1	65.9	56.6	44.0	40.0	56.3
54	41.0	43.0M	46.9	40.0	58.7	70.1	73.4	72.5	68.8	55.6	42.8	38.1	55.9M
55	38.9	41.5	50.4	56.8	62.8	64.1	70.8	70.8	68.1	52.0	43.9	39.8	55.0
56	34.8	47.7	45.9	52.4	63.7	67.4	69.5	69.9	62.9	57.9	43.0	45.6	55.1
57	44.9	51.1	47.3	56.6	64.0	71.0	71.9	69.8	68.0	53.5	49.7	39.4	57.3
58	34.8	32.5	47.0	55.5	62.8	70.3	71.2	71.0	67.8	53.7	48.7	37.5	54.4
69	34.2	34.9	35.9	51.4	57.9	67.9	71.2	67.2	63.3	56.4	36.9	31.4	50.7
70	28.2	31.0	44.3	55.0	58.8	65.7	68.5	71.5	67.4	56.2	35.3	36.4	51.5
71	36.3	35.7	38.5	45.8	55.3	65.7	69.3	69.7	65.4	57.8	39.8	48.3	52.3
72	44.2	37.4	43.9	51.4	58.5	62.9	67.8	69.4	65.0M	55.2	44.5M	43.3	53.6M
73	35.9	34.8M	51.6	51.6	58.3	67.9	70.9	69.6	68.0	54.4	47.9	36.1	53.9M
74	52.5	37.9M	47.4M	51.9	62.7	65.1	69.1	69.3	64.8	47.3	41.0	38.3	53.9M
75	40.0	41.9	43.6	49.8	63.5	68.2	70.0	70.6	63.5	55.8	43.9M	35.5	53.9M
SUM	950.2	986.8	1134.0	1333.5	1526.2	1695.0	1764.1	1755.2	1647.7	1355.6	1080.8	955.7	1348.9

STATION: 09 0140 — AVERAGE TEMPERATURE — ALBANY 3 SE, GA

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
51	52.2	55.0	61.5	65.6	74.1	82.4	83.9	84.3	80.2	71.2	56.4	57.4M	68.7M
52	59.1	56.5	60.5M	65.1	75.2	85.0	84.8	82.0	75.9	64.4	57.0	49.6	67.9M
64	45.1E	45.9	57.3	66.6	72.8	79.9	78.9	79.2	76.1	62.3	58.6	51.8	64.5E
65	49.2	49.0	54.1	66.9	74.2	76.0	79.3	80.3	77.2	64.4	58.4	48.3	64.9
66	44.0	47.5	55.0	64.9	71.8	74.7	82.0	79.1	76.3	66.8	55.5	47.8	63.8
67	49.8	47.0	60.1	69.4	70.6	77.1	77.9	78.7	71.6	62.3	53.8	54.3	64.4
68	45.2	42.6	53.8	67.3	71.3	78.9	81.0	81.8	76.3	67.3	52.8	45.6	63.7
69	46.8	47.1	49.9	65.9	70.7	80.3	82.0	78.1	74.6	68.4	52.8	46.0	63.6
70	40.3	46.4	57.2	67.8	72.8	76.9	80.5	81.0	79.5	68.9	51.1	51.8	64.5
71	48.2	50.0	57.5	61.9	68.3	78.5	79.4	79.9	77.1	69.9	55.2	58.8	65.0
72	55.4	48.6	58.1	65.4	70.3	75.9	79.9	81.3	79.0M	67.6	55.6M	55.0	66.0M
73	47.7	47.1M	62.2	62.7	70.5	78.3	82.0	80.5	79.2	68.7	61.4	49.4	65.8M
74	62.3	51.0M	61.0M	64.6	74.3	76.5	79.1	77.7	73.9	62.9	55.9	50.1	65.8M
75	52.4	54.2	54.5	62.6	75.0	78.4	77.0M	79.1	73.5	68.3	57.3M	48.3M	65.2M
SUM	1246.2	1292.5	1453.3	1656.6	1840.6	1980.4	2037.3	2030.4	1931.1	1682.5	1421.6	1268.0	1653.0

EXHIBIT 98

STATION: 09 0140 — TOTAL PRECIPITATION — ALBANY 3 SE, GA

YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
51	1.32	1.28	6.10	4.81	2.08	3.86	3.23	3.32	5.63	.49	6.33	4.74	43.19
52	1.84	6.75	4.75	4.35	6.20	1.85	2.81	7.19	4.25	.41	3.04	3.20	46.54
53	4.76	5.26	3.29	5.84	5.63	4.19	6.75	3.55	10.09	.25	1.69	9.99	61.29
54	.90	1.08	2.95	3.09	2.51	3.58	4.58	5.98	1.26	.58	3.04	2.18	31.73
55	3.41	1.89	.08	7.02	3.22	2.39	9.98	.73	3.92	3.26	.84	.64	37.38
56	2.54	6.39	5.09	7.75	2.62	2.93	9.07	.92	6.43	2.68	1.23	3.30	45.95
57	1.19	1.22	4.92	7.35	3.89	2.65	5.39	1.46	9.23	2.72	8.28	1.90	50.20
58	3.05	6.49	5.15	8.07	3.18	7.69	5.30	3.13	.80	1.52	1.22	3.01	48.51
59	4.06	6.84	7.89	2.98	5.78	4.08	7.99	3.30	3.58	6.90	.34	2.68	56.42
70	2.77	3.83	8.97	.90	6.67	5.13	5.42	6.52	1.10	3.18	.82	4.47	49.78
71	4.10	5.35	9.09	4.07	5.97	2.70	9.26	7.74	1.00	2.72	2.79	7.82	62.61
72	5.41	5.70	6.04	.66	3.07	7.43	6.28	4.50	2.90	3.16	2.83	4.20	52.18
73	10.03	6.33	6.26	9.41	5.66	5.90	2.52	3.95	2.93	.32	2.03	4.41	59.75
74	6.25	9.36	4.54E	4.39	4.64	6.27	8.04	2.13	8.58	.76	1.95	2.70	59.61E
75	6.89	2.46	7.76	8.49	4.01	5.83	8.06	2.05	1.93	2.12	1.80	2.85	54.25
SUM	108.60	122.15	122.45	114.99	97.69	121.30	145.88	99.34	101.37	46.33	58.74	98.13	1236.97

STATION: 09 0140 — TOTAL SNOWFALL — ALBANY 3 SE, GA

SEASON	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	SEASON
50-51							.0	.0	.0	.0	.0	.0	
51-52	.0	.0	.0	.0	.0	.0	.0	T	.0	.0	.0	.0	.0
52-53	.0	.0	.0	.0	.0	T	.0	.0	.0	.0	.0	.0	.0
53-54	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
69-70	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
70-71	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
71-72	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
72-73	.0	.0	.0	.0	.0	.0	.0	3.0	.0	.0	.0	.0	3.0
73-74	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
74-75	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
75-76	.0	.0	.0	.0	.0	.0							
SUM	.0	.0	.0	.0	.0	.0	.0	3.5	.0	.0	.0	.0	3.5

E AMOUNT IS WHOLLY OR PARTLY ESTIMATED.

T TRACE, AN AMOUNT TOO SMALL TO MEASURE.

M ONE OR MORE DAYS OF RECORD MISSING; IF AVERAGE VALUE IS ENTERED, LESS THAN 10 DAYS RECORD IS MISSING.

D WATER EQUIVALENT OF SNOWFALL WHOLLY OR PARTLY ESTIMATED.

EXHIBIT 99

MONTHLY NORMALS OF TEMPERATURE, PRECIPITATION AND HEATING AND COOLING DEGREE DAYS (1941-70)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
TEMPERATURE	50.7	53.1	58.9	67.4	74.6	80.3	81.8	81.6	77.5	68.0	57.5	50.9	66.9
PRECIPITATION	3.86	4.16	5.49	4.35	3.87	4.56	5.64	4.14	3.90	2.21	2.47	4.19	48.84
HEATING DEGREE DAY	468	371	243	42	0	0	0	0	0	54	247	447	1872
COOLING DEGREE DAY	25	38	54	114	302	459	521	515	375	147	22	10	2582

CLIMATOGRAPHY OF THE UNITED STATES NO. 21
CLIMATIC SUMMARIES OF RESORT AREAS

A series of substation summaries was published during the years 1963 through 1972 that describe the general climate of resort areas in the United States. The format varies somewhat from publication to publication, but all issues (4 to 6 pages each) carry a narrative description of the topography, general and specific climatic conditions as they relate to health and vacation advantages, and other similar information. Various types of tables and graphs on temperature, precipitation, and snowfall are used to supplement the text. These publications were prepared for the following locations:

STATE	LOCATION
Alaska	Anchorage to Valdez Area
	Glacier Bay National Monument
	Katmai National Monument
	Kenai Peninsula
	Mount McKinley National Park
	Sitka National Monument
Arkansas	Hot Springs National Park
	White River Lakes
Georgia	Georgia Mountain Area
	The Golden Isles of Georgia
	Warm Springs
Indiana	French Lick and West Baden Springs
Kentucky	Kentucky Lake and Lake Barkley Area
Michigan	Houghton-Higgins Lake Recreational Area
	Isle Royale National Park
	Pictured Rocks National Lakeshore
	Sleeping Bear Dunes National Lakeshore
New Jersey	Atlantic City
New Mexico	Carlsbad Caverns
	Cloudcroft
	Red River
New York	Saratoga Springs
North Carolina	Cape Hatteras National Seashore
	Pinehurst-Southern Pines
Oregon	Upper Cascades of Oregon
Pennsylvania	The Pocono Mountains
Puerto Rico	San Juan
South Carolina	Hilton Head and the Sea Islands
	Lake Hartwell Recreation Area
	Myrtle Beach
	The Santee and Lake Marion Recreational Area
Texas	Kerrville
	Mineral Wells
Virginia	Shenandoah National Park
West Virginia	Berkeley Springs
	White Sulfur Springs

This series of GUIDES was prepared only for a few selected cities or areas of the country. Those published, and the year of issue for each, are:

Selma, Alabama-1956
Baltimore, Maryland-1956
New York City, NY and Nearby Areas-1958
Seattle, Washington and Adjacent Puget Sound Area-1961
Chicago, Illinois Area-1962
Houston, Galveston, Texas Area-1962

THE CLIMATIC HANDBOOK for Washington, D.C., published in 1949, was a forerunner of the above series. Although each issue contains some tables and charts of particular interest to the locality, each publication follows the same general format. Each contains a narrative summary of general climatic conditions for the area, a station location table, and a map of the area. The following tables and graphs appear in all or most of these GUIDES:

Monthly and annual average temperatures
Highest temperature of record for each day of year and year of occurrence
Lowest temperature of record for each day of year and year of occurrence
Distribution of monthly average, average maximum, average minimum temperatures
Mean hourly temperatures
Mean and distribution of dry bulb temperatures
Highest daily minimum temperatures
Total heating-degree days
Distribution of monthly and seasonal totals of heating-degree days
Percentage frequency of occurrences of dry bulb temperature versus wind speed
Seasonal temperature departures from long-period averages (graph)
Critical low temperatures with mean and extreme dates and length of seasons
Mean daily temperatures at substations in area
Mean daily maximum temperatures at substations in area
Mean daily minimum temperatures at substations in area
Rainfall intensity-duration-frequency curves (graph)
Total precipitation
Distribution of precipitation totals
Maximum precipitation by time intervals
Mean total precipitation at substations in area
Total snowfall
Distribution of snowfall totals
Maximum snowfall
Percentage chance of first and last snowfall (graph)
Mean total snowfall at substations in area
Mean station pressure and extremes of sea level pressure
Number of days fastest mile of wind exceeded specified limits
Percentage frequency and mean speed of surface winds
Annual wind rose (graph)
Percentage frequency of temperature-relative humidity index

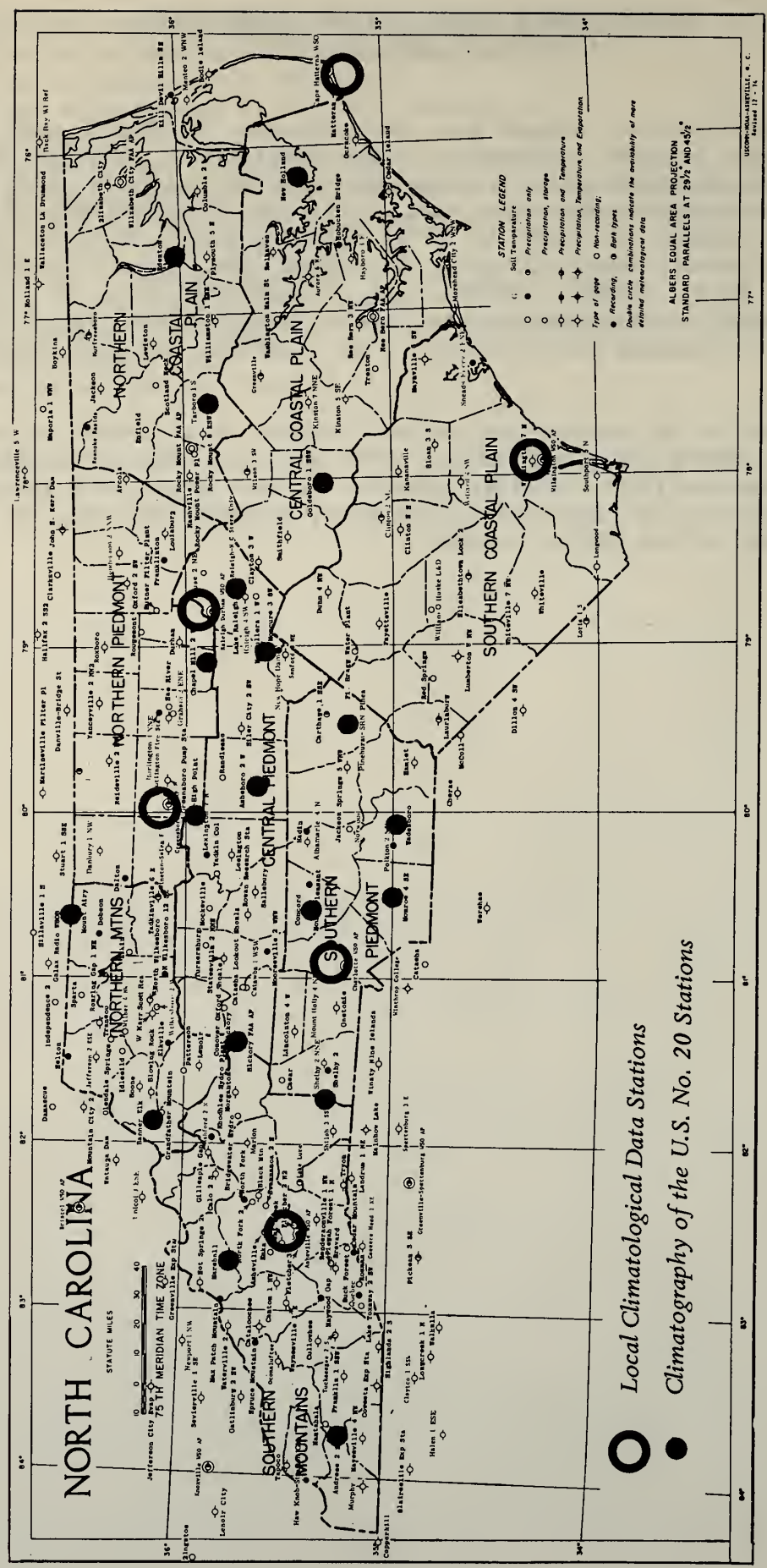
Cooling-degree day totals, based on temperature-humidity index
Mean and distribution of relative humidity
Mean and distribution of dew point
Mean and distribution of wet bulb temperature
Percentage frequency of selected ceiling heights
Percentage frequency of selected visibilities
Percentage frequency of selected combinations of ceiling-visibility
Average daily solar radiation (langleys) on horizontal surface
Times of sunrise and sunset
Percentage frequency of selected climatic elements
Summary of selected climatic elements
Daily, monthly, and annual normals of temperature, and accumulated heating-degree days
Comparative data for selected cities

CLIMATOGRAPHY OF THE UNITED STATES NO. 60
CLIMATE OF (NAME OF STATE)

This publication is issued for each of the 50 States and for Puerto Rico-U.S. Virgin Islands combined. Each publication contains a narrative climatic summary of the State, the means and extremes table for each cooperative climatological station in the State that is in the CLIMATOGRAPHY OF THE UNITED STATES NO. 20, CLIMATE OF (NAME OF CITY) series (Exhibit 94), and the normals, means, and extremes table (Exhibit 46) from the latest issue of LOCAL CLIMATOLOGICAL DATA, ANNUAL SUMMARY WITH COMPARATIVE DATA for all stations (reference page 35) in the State at the time of publication. It also contains a map (Exhibit 100) showing the locations of all stations for which data tables are presented.

This series is an updated and revised version of a similar series entitled CLIMATE OF THE STATES published between 1959-1961 with some subsequent revisions and reprints through 1972. Similar data for earlier years were included in the 1941 U.S. Department of Agriculture Yearbook, CLIMATE AND MAN, in a section entitled CLIMATES OF THE UNITED STATES.

EXHIBIT 100


NORTH CAROLINA
NORTHERN MTNS
NORTHERN PIEDMONT
NORTHERN COASTAL PLAIN
CENTRAL COASTAL PLAIN
CENTRAL PIEDMONT
SOUTHERN COASTAL PLAIN
SOUTHERN MOUNTAINS
SOUTHERN PIEDMONT
STATION LEGEND
Soil Temperature
Precipitation only
Precipitation, storage
Precipitation and Temperature
Precipitation, Temperature, and Evaporation
Type of gage
Non-recording;
Recording,
Both types
Double circle combinations indicate the availability of more detailed meteorological data
ALBERS EQUAL AREA PROJECTION
STANDARD PARALLELS AT 29½ AND 45½°
STATUTE MILES
75TH MERIDIAN TIME ZONE
Local Climatological Data Stations
Climatography of the U.S. No. 20 Stations

CLIMATOGRAPHY OF THE UNITED STATES NO. 81
MONTHLY NORMALS OF TEMPERATURE, PRECIPITATION,
AND HEATING AND COOLING DEGREE DAYS, 1941-70

This publication, issued for each State, or combination of States and for Puerto Rico, U.S. Virgin Islands and Swan Island combined (45 separate publications), contains monthly and annual normals of these four elements (Exhibits 101,102,103, and 104) for all National Weather Service stations in the State and for all Cooperative Climatological Stations in the State which have adequate records for this 30-year period. Also included are separate listings showing the latitude, longitude, and elevation for each station that reports temperature, and for those stations that report precipitation (Exhibits 105 and 106), and a map showing the location of all stations for which normals are published (Exhibit 107).

A similar publication was prepared for the 30-year period 1931 through 1960 but did not include cooling-degree days. In addition, an earlier publication of the same title was published as U.S. Weather Bureau Technical Paper No. 31 in 1956. It contained normals for the 1921-1950 period, but did not include the normals for Cooperative Climatological Stations.

NORTH DAKOTA

EXHIBIT 101

MEAN TEMPERATURE

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
AMIDON	13.8	18.7	26.3	41.5	52.8	61.4	69.5	68.8	57.3	46.7	30.3	20.0	42.3
ASHLEY	8.2	12.5	24.1	41.5	53.2	62.5	68.9	67.8	56.7	46.4	28.6	15.2	40.5
BISBEE	3.1	7.9	20.6	39.6	52.1	62.2	68.1	66.3	55.1	44.1	25.2	10.6	37.9
BISMARCK WSO	8.2	13.5	25.1	43.0	54.4	63.8	70.8	69.2	57.5	46.8	28.9	15.6	41.4
BOTTINEAU	1.7	6.8	19.2	39.1	51.6	61.3	67.4	66.1	54.5	43.6	23.8	9.4	37.0
BOWBELLS	4.6	9.6	20.1	39.0	51.1	60.4	67.1	65.4	54.0	43.6	25.4	12.1	37.7
BOWMAN COURT HOUSE	14.1	18.8	26.8	42.0	53.3	61.9	69.9	68.8	57.2	46.7	30.3	20.2	42.5
CARRINGTON	5.3	9.6	21.6	39.5	51.8	61.8	68.3	66.6	55.0	45.4	26.5	12.3	38.6
CARSON	10.1	15.2	24.7	41.8	53.4	62.6	70.1	69.2	57.3	46.7	29.0	17.2	41.4
CAVALIER	3.3	8.6	21.5	40.4	53.6	63.6	69.2	67.5	56.5	45.7	26.6	10.7	38.9
CENTER	8.5	13.9	24.1	41.4	53.3	62.3	69.0	67.6	56.0	45.7	28.4	15.5	40.5
COOPERSTOWN	5.4	10.5	23.6	41.6	53.8	63.4	69.5	68.4	57.0	46.2	27.7	12.4	40.0
CROSBY	5.7	11.3	21.8	40.3	52.3	61.0	68.1	66.4	55.1	44.6	26.2	13.1	38.8
DEVILS LAKE KOLR	4.2	9.1	21.6	40.1	52.4	62.5	68.9	67.3	55.8	45.2	26.1	11.2	38.7
DICKINSON FAA AIRPORT	12.1	16.8	25.3	41.2	52.5	61.5	69.3	68.2	56.6	46.3	29.2	18.5	41.5

NORTH DAKOTA

EXHIBIT 102

PRECIPITATION NORMALS

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
KENMARE 1 WSW	0.54	0.51	0.70	1.29	1.98	3.76	2.05	1.90	1.47	0.75	0.54	0.47	15.96
KENSAL WILDLIFE REFUGE	0.36	0.33	0.58	1.44	2.61	3.45	2.92	2.73	1.87	1.12	0.55	0.43	18.39
LANGDON EXP FARM	0.76	0.48	0.97	1.35	2.45	3.05	2.98	2.80	2.13	1.22	0.85	0.66	19.70
LARIMORE	0.56	0.45	0.91	1.41	2.22	3.49	2.67	2.51	2.36	1.08	0.78	0.59	19.03
LEEDS	0.72	0.42	1.01	1.36	2.35	3.25	2.44	2.03	1.64	0.89	0.65	0.62	17.38
LINTON	0.52	0.47	0.77	1.75	2.56	4.05	2.53	2.02	1.71	1.03	0.60	0.47	18.48
LISBON	0.42	0.51	0.80	2.11	2.59	3.64	3.09	2.91	1.76	1.16	0.67	0.53	20.19
MADDOCK AGRI SCHOOL	0.54	0.40	0.78	1.22	2.23	3.55	2.73	2.15	1.76	0.94	0.55	0.49	17.34
MANDAN EXP STATION	0.42	0.39	0.67	1.42	2.24	4.02	2.23	2.20	1.52	0.82	0.53	0.31	16.77
MARMARTH	0.45	0.45	0.56	1.23	2.07	3.76	2.02	1.71	1.12	0.74	0.49	0.37	14.97
MAX	0.46	0.51	0.71	1.54	2.31	4.04	2.56	2.33	1.49	0.70	0.64	0.38	17.67
MAYVILLE	0.59	0.47	0.74	1.45	2.43	3.70	2.52	2.77	2.24	1.03	0.69	0.58	19.21
MCCLUSKY	0.59	0.47	0.85	1.45	2.33	4.04	2.30	2.04	1.64	0.84	0.61	0.52	17.68
MCHENRY 5 NNW	0.46	0.37	0.71	1.25	2.24	3.47	2.67	2.44	2.01	1.09	0.53	0.46	17.70
MCLEOD 3 E	0.45	0.46	0.81	1.77	2.57	3.44	3.05	2.80	1.84	1.12	0.72	0.53	19.56

EXHIBIT 103

NORTH DAKOTA

MONTHLY AND ANNUAL HEATING DEGREE DAY NORMALS

STATION	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	ANNUAL
VELVA	22	50	272	577	1110	1562	1776	1456	1262	681	346	122	9236
WAHPETON	10	20	191	490	1026	1531	1745	1442	1194	624	277	71	8621
WASHBURN	16	31	240	543	1065	1507	1727	1406	1225	660	335	113	8868
WATFORD CITY	25	35	261	573	1071	1482	1708	1361	1218	663	345	134	8876
WESTHOPE	28	72	318	651	1212	1699	1928	1602	1389	753	396	145	10193
WILLISTON WSO	22	35	274	598	1107	1538	1758	1422	1249	678	345	135	9161
WILLOW CITY	34	75	320	663	1209	1714	1950	1621	1395	759	414	147	10301
WISHEK	28	61	295	617	1125	1581	1810	1512	1314	741	400	155	9639

EXHIBIT 104

MONTHLY AND ANNUAL COOLING DEGREE DAY NORMALS

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
AMIDON	0	0	0	0	12	53	163	155	34	6	0	0	423
ASHLEY	0	0	0	0	7	65	151	132	20	0	0	0	375
BISBEE	0	0	0	0	0	54	126	107	10	0	0	0	297
BISMARCK WSO	0	0	0	0	11	86	198	165	27	0	0	0	487
BOTTINEAU	0	0	0	0	6	46	120	109	13	0	0	0	294
BOWBELLS	0	0	0	0	0	39	108	97	16	0	0	0	260
BOWMAN COURT HOUSE	0	0	0	0	10	66	179	157	36	0	0	0	448

EXHIBIT 105

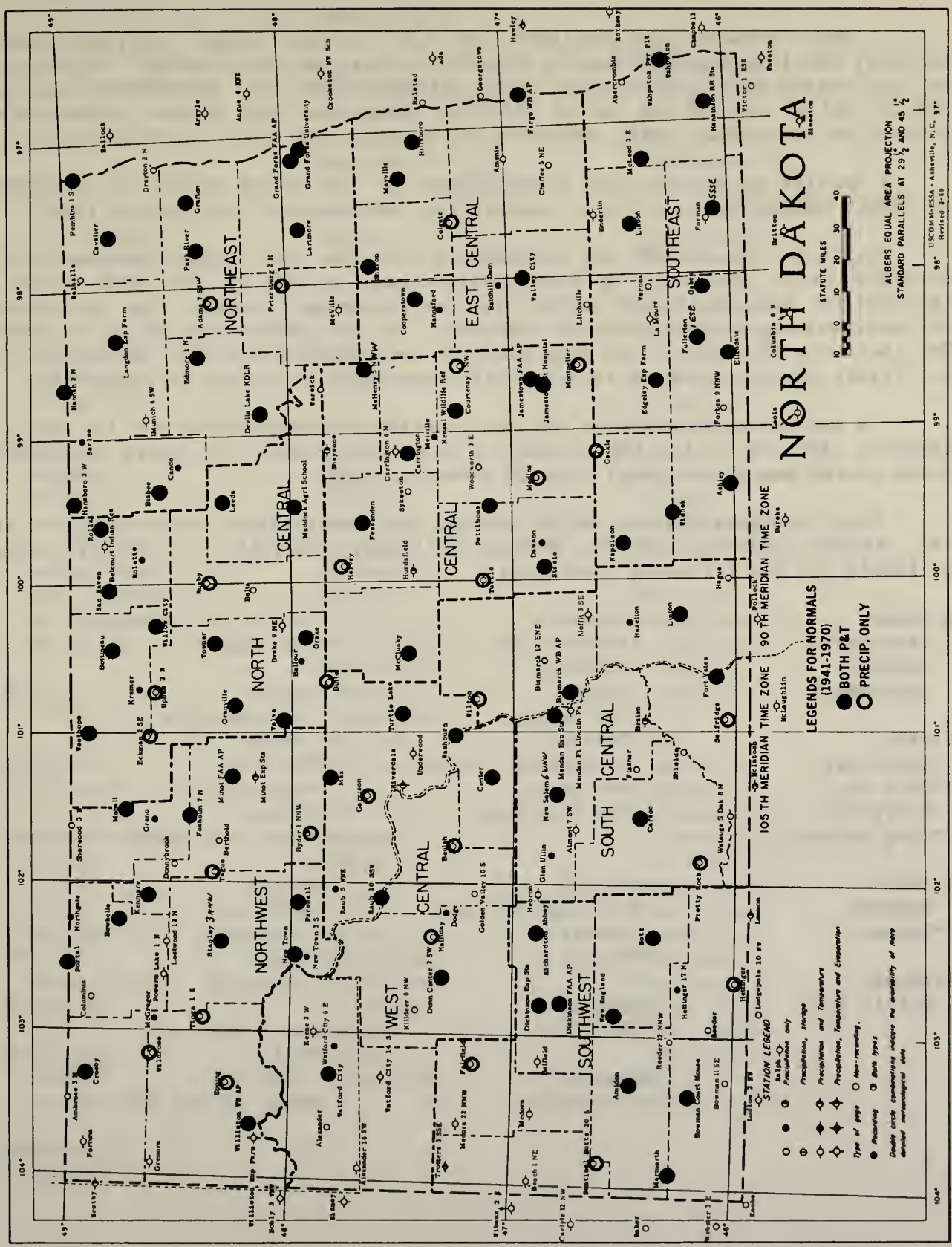
NORTH DAKOTA **TEMPERATURE**

STATION	DIV	NAME	LAT	LONG	ELEV
32 0209	07	AMIDON	N4629	W10319	2910
32 0382	09	ASHLEY	N4602	W09922	2001
32 0796	03	BISBEE	N4837	W09922	1600
32 0819	08	BISMARCK WSO	N4646	W10045	1647
32 0941	02	BOTTINEAU	N4850	W10027	1640
32 0961	01	BOWBELLS	N4848	W10215	1958
32 0995	07	BOWMAN COURT HOUSE	N4611	W10323	2980
32 1360	05	CARRINGTON	N4727	W09908	1586
32 1370	08	CARSON	N4625	W10134	2310
32 1435	03	CAVALIER	N4848	W09738	890
32 1456	04	CENTER	N4707	W10118	2100
32 1766	06	COOPERSTOWN	N4726	W09807	1428
32 1871	01	CROSBY	N4854	W10318	1952
32 2158	03	DEVILS LAKE KOLR	N4807	W09852	1464
32 2183	07	DICKINSON FAA AIRPORT	N4647	W10248	2585
32 2188	07	DICKINSON EXP STATION	N4653	W10248	2460
32 2298	02	DRAKE	N4755	W10022	1636
32 2365	04	DUNN CENTER 2 SW	N4721	W10239	2232
32 2482	09	EDGELEY	N4622	W09843	1574
32 2525	03	EDMORE 1 N	N4825	W09828	1520
32 2605	09	ELLENDALE	N4601	W09832	1460
32 2859	06	FARGO WSO	N4654	W09648	896
32 2949	05	FESSENDEN	N4739	W09937	1620
32 3117	09	FORMAN 5 SSE	N4602	W09736	1250
32 3207	08	FORT YATES	N4606	W10038	1653
32 3217	01	FOXHOLM 7 N	N4827	W10134	1609
32 3287	09	FULLERTON 1 ESE	N4609	W09824	1439
32 3594	03	GRAFTON	N4825	W09725	827
32 3616	03	GRAND FORKS FAA AP	N4757	W09711	839
32 3621	03	GRAND FORKS UNIVERSITY	N4756	W09705	830
32 3686	02	GRANVILLE	N4816	W10051	1504
32 3908	09	HANKINSON R R STATION	N4604	W09654	1068
32 3936	03	HANNAH 2 N	N4900	W09841	1575
32 3963	03	HANSBORO 3 W	N4857	W09927	1684
32 4203	06	HILLSBORO	N4724	W09704	899

EXHIBIT 106

NORTH DAKOTA **PRECIPITATION**

STATION	DIV	NAME		LAT	LONG	ELEV
32 0022	03	ADAMS 7 SSW		N4820	W09807	1554
32 0209	07	AMIDON		N4629	W10319	2910
32 0382	09	ASHLEY		N4602	W09922	2001
32 0766	04	BEULAH		N4716	W10147	1780
32 0796	03	BISBEE		N4837	W09922	1600
32 0819	08	BISMARCK WSO	//R	N4646	W10045	1647
32 0941	02	BOTTINEAU		N4850	W10027	1640
32 0961	01	BOWBELLS		N4848	W10215	1958
32 0995	07	BOWMAN COURT HOUSE		N4611	W10323	2980
32 1225	04	BUTTE		N4750	W10040	1740
32 1360	05	CARRINGTON		N4727	W09908	1586
32 1370	08	CARSON		N4625	W10134	2310
32 1435	03	CAVALIER		N4848	W09738	890
32 1456	04	CENTER		N4707	W10118	2100
32 1686	06	COLGATE		N4714	W09739	1180
32 1766	06	COOPERSTOWN		N4726	W09807	1428
32 1816	05	COURTENAY 1 NW		N4714	W09835	1515
32 1871	01	CROSBY		N4854	W10318	1952
32 2158	03	DEVILS LAKE KOLR		N4807	W09852	1464
32 2183	07	DICKINSON FAA AIRPORT	//R	N4647	W10248	2585
32 2188	07	DICKINSON EXP STATION		N4653	W10248	2460
32 2298	02	DRAKE		N4755	W10022	1636
32 2365	04	DUNN CENTER 2 SW		N4721	W10239	2232
32 2472	02	ECKMAN 2 SE		N4839	W10101	1495
32 2482	09	EDGELEY		N4622	W09843	1574
32 2525	03	EDMORE 1 N		N4825	W09828	1520
32 2605	09	ELLENDALE		N4601	W09832	1460
32 2735	01	EPPING		N4817	W10321	2224
32 2809	07	FAIRFIELD		N4711	W10313	2750
32 2859	06	FARGO WSO	//R	N4654	W09648	896
32 2949	05	FESSENDEN		N4739	W09937	1620
32 3117	09	FORMAN 5 SSE		N4602	W09736	1250
32 3207	08	FORT YATES		N4606	W10038	1653
32 3217	01	FOXHOLM 7 N		N4827	W10134	1609
32 3287	09	FULLERTON 1 ESE		N4609	W09824	1439


NORTH DAKOTA
NORTHEAST
NORTH CENTRAL
EAST CENTRAL
SOUTHEAST
NORTHWEST
WEST CENTRAL
SOUTH CENTRAL
SOUTHWEST
105 TH MERIDIAN TIME ZONE
90 TH MERIDIAN TIME ZONE
LEGENDS FOR NORMALS (1941-1970)
BOTH P&T
PRECIP. ONLY
STATION LEGEND
Precipitation, Temperature and Evaporation
Precipitation and Temperature
Precipitation, Storage
Precipitation only
Both types
Non-recording
Recording
Double circle combinations indicate the availability of more detailed meteorological data
ALBERS EQUAL AREA PROJECTION
STANDARD PARALLELS AT 29 1/2 AND 45 1/2
STATUTE MILES
USCOMM-ESSA - Asheville, N.C. 97
Revised 2-69

CLIMATOGRAPHY OF THE UNITED STATES NO. 82
SUMMARY OF HOURLY OBSERVATIONS

This summary was published for U.S. Weather Bureau (National Weather Service) stations where 24-hourly observations are recorded daily. It is based on the monthly data published in LOCAL CLIMATOLOGICAL DATA SUPPLEMENTS (see page 30) for all or part of the period 1951-60. Where the full 10-year period is not covered by the monthly data, summaries are based on the period 1956-60.

A similar series entitled CLIMATOGRAPHY OF THE UNITED STATES NO. 30-SUMMARY OF HOURLY OBSERVATIONS, a 5-year summary for 1949-54, was published in 1956.

Exhibits 108 and 109 are examples of the five data tables and the Station Location table presented in this publication. A set of the data tables is included for each month with another set for the annual values. The total number of observations is indicated on each page. In the percentage tables the symbol "+" indicates more than 0 but less than 0.5 in table E, and 0.05 in tables B and D. Values are not adjusted to make their sums equal to column or row totals.

A narrative description of the location and topography of the station, together with one pertaining to smoke sources is included and, where available, a smoke source map of the local area is shown.

These publications, or microfiche of the publications, can be obtained from the National Climatic Center, Federal Building, Asheville, NC 28801, and are available for the following locations:

Alabama
- Birmingham
- Mobile
- Montgomery

Alaska
- *Anchorage
- *Cold Bay
- Fairbanks
- *King Salmon

Arizona
- Phoenix
- *Tucson

Arkansas
- Little Rock

California
- *Bakersfield
- Burbank
- Fresno
- Los Angeles
- Oakland
- Sacramento
- San Diego
- San Francisco

Colorado
- *Colorado Springs
- Denver
- **Pueblo

Connecticut
- *Hartford

Delaware
- Wilmington

District of Columbia
- Washington

Florida
- Jacksonville
- Miami
- *Orlando
- *Tallahassee
- Tampa
- *West Palm Beach

Georgia
- Atlanta
- Augusta
- *Macon
- Savannah

Hawaii-Pacific
- *Hilo
- Honolulu
- *Wake Island

Idaho
  Boise
**Pocatello

Illinois
  Chicago (Midway)
 *Chicago (O'Hare)
  Moline
  Springfield

Indiana
  Evansville
  Fort Wayne
  Indianapolis
 *South Bend

Iowa
**Burlington
  Des Moines
  Sioux City

Kansas
  Topeka
  Wichita

Louisiana
  Baton Rouge
  Lake Charles
  New Orleans
  Shreveport

Maine
  Portland

Maryland
  Baltimore

Massachusetts
  Boston

Michigan
  Detroit (City AP)
 *Flint
  Grand Rapids
**Lansing

Minnesota
  Duluth
  Minneapolis

Mississippi
  Jackson

Missouri
  Kansas City
  St. Louis
  Springfield

Montana
**Billings
  Great Falls
**Helena
**Missoula

Nebraska
  Omaha

New Jersey
  Newark

New Mexico
  Albuquerque

New York
  Albany
 *Binghamton
  Buffalo
  New York (Int'l)
  New York (LaGuardia)
  Rochester
  Syracuse

North Carolina
**Asheville
  Charlotte
  Greensboro
  Raleigh
 *Winston-Salem

North Dakota
  Bismarck
  Fargo

Ohio
  Akron
  Cincinnati
  Cleveland
  Columbus
  Dayton
**Toledo
  Youngstown

Oklahoma
  Oklahoma City
  Tulsa

Oregon
  Portland
 *Salem

Pennsylvania
  Allentown
  Harrisburg
  Philadelphia
 *Pittsburgh
 *Scranton

Rhode Island
  Providence

South Carolina
  Charleston
  Columbia

South Dakota
  Huron
 *Rapid City
 *Sioux Falls

Tennessee
  Chattanooga
  Knoxville
  Memphis
  Nashville

Texas
  Amarillo
  Austin
  Brownsville
  Corpus Christi
  El Paso
 *Fort Worth
  Galveston
  Houston
  Laredo
 *Lubbock
 *Midland
**Port Arthur
  San Antonio
 *Waco
 *Wichita Falls

Utah
Salt Lake City

Vermont
*Burlington

Virginia
Norfolk
Richmond
*Roanoke

Washington
Spokane
**Yakima

West Indies
San Juan, P.R.

West Virginia
*Charleston

Wisconsin
*Green Bay
**La Crosse
Madison
Milwaukee

Wyoming
*Casper
Cheyenne

** Five-year RECAP, 1949-54
* Five-year RECAP, 1956-60
Ten-year RECAP, 1951-60

OAKLAND, CALIFORNIA
International AP

A TEMPERATURE AND WIND SPEED–RELATIVE HUMIDITY OCCURRENCES:

WIND	0-4 M.P.H						5-14 M.P.H.						15-24 M.P.H.						25 M.P.H AND OVER						TOTAL OBS.
REL. HUMID. / TEMP (°F)	UNDER 30	30-49%	50-69%	70-79%	80-89%	90-100%	UNDER 30	30-49%	50-69%	70-79%	80-89%	90-100%	UNDER 30	30-49%	50-69%	70-79%	80-89%	90-100%	UNDER 30	30-49%	50-69%	70-79%	80-89%	90-100%	
69/ 65				1					3	2															6
64/ 60		6	16	11	11	3	2	11	28	16	20	8			5	1	9	4							151
59/ 55	1	13	57	61	50	81	3	60	160	111	111	125		4	26	22	40	24			3			4	956
54/ 50	3	28	116	195	224	241	1	61	200	244	355	292		7	31	66	96	45		1		10	14	4	2234
49/ 45	1	27	98	208	353	358	1	55	162	199	301	176		7	23	20	51	17			1	2	5	1	2066
44/ 40		10	58	97	298	438		21	58	85	174	147		1	2	1	3	6							1391
39/ 35		8	35	43	106	189		10	34	23	42	32			4		1								527
34/ 30		2	4	12	38	39		1	2	1	6	3													108
29/ 25					1																				1
TOTAL	5	94	384	628	1081	1349	7	219	639	681	1009	783		19	91	110	200	96		1	4	12	19	9	7440

B PERCENTAGE FREQUENCIES OF WIND DIRECTION AND SPEED:

DIRECTION	HOURLY OBSERVATIONS OF WIND SPEED (IN MILES PER HOUR)										TOTAL	AV SPEED
	0-3	4-7	8-12	13-18	19-24	25-31	32-38	39-46	47 OVER			
N	.6	1.3	.7	.3	+						2.9	6.9
NNE	.5	.8	.6	.2	.1	+					2.1	7.6
NE	.9	1.3	1.2	.3	.1						3.6	7.3
ENE	1.3	2.2	1.2	.2							4.9	5.9
E	1.9	2.3	.8	.1							5.0	5.0
ESE	1.4	2.8	.7	+							4.9	5.1
SE	1.5	4.3	4.5	1.9	.3	.1					12.6	8.5
SSE	1.0	2.6	3.0	2.7	1.0	.4	.1				10.8	11.4
S	1.0	2.1	1.3	.6		+					5.0	7.3
SSW	.8	1.4	.9	.5	.1	+					3.7	8.0
SW	.9	1.5	1.2	.5	.1						4.2	7.4
WSW	.5	2.0	1.3	.4	.1						4.4	7.7
W	.6	1.8	1.3	.5	.1						4.3	8.0
WNW	.7	1.7	1.5	.5	.1						4.4	8.0
NW	.7	1.1	.7	.2	+						2.7	6.4
NNW	.5	.9	.5	.1	+						2.0	6.1
CALM	22.4										22.4	
TOTAL	37.1	29.9	21.4	9.0	2.0	.5	.1				100	6.0

C OCCURRENCES OF PRECIPITATION AMOUNTS:

INTENSITIES	FREQUENCY OF OCCURRENCE FOR EACH HOUR OF THE DAY																								NO OF DAYS WITH
	AM HOUR ENDING AT												PM HOUR ENDING AT												
	1	2	3	4	5	6	7	8	9	10	11	NOON	1	2	3	4	5	6	7	8	9	10	11	MID.	
TRACE	25	21	21	18	23	38	30	34	34	31	31	28	32	36	27	29	27	22	27	26	28	23	30	22	28
01 IN	9	8	2	9	8	4	15	8	11	12	9	8	3	9	13	11	10	14	5	8	9	9	7	14	7
02 TO 09 IN	20	22	23	23	23	21	23	21	18	18	15	16	15	16	14	13	13	18	22	13	18	22	15	21	36
10 TO 24 IN	5	4	6	6	6	4	3	6	6	3	9	5	3	4	7	7	7	3	7	8	5	5	5	2	21
25 TO 49 IN	1	2						1		1		1	1	2	1		1	1		1					33
50 TO 99 IN																									27
1.00 TO 1.99 IN																									5
2.00 IN AND OVER																									
TOTAL	60	57	52	56	60	67	71	70	69	65	64	58	54	67	62	60	58	58	61	56	57	59	57	59	157

D PERCENTAGE FREQUENCIES OF CEILING–VISIBILITY:

VISIBILITY (MILES)	CEILING (FEET)									
	0	100-200	300-400	500-900	1000-1900	2000-2900	3000-4900	5000-9300	OVER 9300	TOT
0 TO 1/8	1.5	.4	.1		+				.4	2.4
3/16 TO 3/8	+	.1	+		+				.1	.3
1/2 TO 3/4	+	.1	.2	.1	+			+	.4	.8
1 TO 2 1/2		+	.2	.5	.7	.2	.1	.2	1.7	3.5
3 TO 6			.1	.8	3.1	1.9	1.1	1.0	10.2	18.3
7 TO 15			+	.3	4.3	7.3	10.2	6.3	38.7	67.0
20 TO 30					+	.1	.7	.5	6.1	7.4
35 OR MORE									.3	.3
TOTAL	1.5	.6	.6	1.6	8.2	9.5	12.1	8.1	57.8	100

E PERCENTAGE FREQUENCIES OF SKY COVER, WIND, AND RELATIVE HUMIDITY:

HOUR OF DAY	CLOUDS SCALE 0-10			WIND SPEED (M. P. H.)				RELATIVE HUMIDITY (%)					
	0-3	4-7	8-10	0-3	4-12	13-24	25-& OVER	0-29	30-49	50-69	70-79	80-89	90-100
00	42	12	46	40	49	9	1		1	7	14	35	42
01	40	10	51	42	46	10	1		2	6	13	35	45
02	38	11	51	44	48	7	1		2	5	10	37	46
03	38	9	53	49	41	8	2	+	2	4	10	35	48
04	36	8	56	42	47	10	1		1	6	8	33	52
05	35	6	59	42	48	9	1		+	7	9	31	53
06	34	10	57	48	42	9	1		2	5	9	31	52
07	27	9	64	42	47	10	+		2	5	11	31	51
08	25	9	66	45	46	9	+		3	6	13	39	39
09	25	8	67	42	46	11	1		4	11	21	38	26
10	23	10	66	31	55	14	1		5	18	25	34	18
11	24	11	65	23	60	17	1	1	7	21	29	27	15
12	22	12	65	23	60	15	2	1	9	31	25	23	11
13	24	11	65	17	66	16	1	1	10	38	23	18	10
14	25	11	64	17	65	18	+	1	14	34	27	17	8
15	25	12	63	23	64	12	1	1	15	37	25	14	9
16	26	11	62	23	64	13		+	12	32	28	16	11
17	28	12	60	32	56	11	+		8	21	31	26	14
18	34	14	53	36	54	10			3	15	31	35	17
19	35	15	50	43	47	9	1		2	12	26	39	22
20	39	10	51	46	46	8			1	11	23	36	28
21	40	12	48	48	44	7			1	11	18	39	32
22	39	12	49	46	44	10			2	9	16	37	35
23	40	12	48	45	46	9			1	8	16	37	37
AVG	32	11	57	37	51	11	1	+	4	15	19	31	30

EXHIBIT 108

STATION LOCATION

OAKLAND, CALIFORNIA
METROPOLITAN OAKLAND INTERNATIONAL AIRPORT

Location	Occupied from	Occupied to	Airline distance and direction from previous location	Latitude	Longitude	Elevation above (feet)											Remarks
						Sea level		Ground									
						Ground	Actual barometer elevation (H_2)	Wind instruments	Extreme thermometers	Psychrometer	Telepsychrometer	Tipping bucket rain gage	Weighing rain gage	8" rain gage			
ADMINISTRATION BUILDING METROPOLITAN OAKLAND INT. AP 6.2 AIRLINE MI SE OF OAKLAND PO	2/1/49	9/19/52	NO CHANGE	37°44'N	122°12'W	3	18	49	21	20	5#		18	18			# Telepsychrometer used for all psychrometric and extreme temperature data.
" "	9/19/52	PRESENT	NO CHANGE	37°44'N	122°12'W	3	18	49	31	30	5#	28		28			Thermometers and rain gages moved to 2nd story roof. Tipping bucket rain gage installed.

LOCATION AND TOPOGRAPHY:

The Metropolitan Oakland International Airport is located on the northeast shore of the San Francisco Bay on filled tidelands about seven airline miles south of the center of Oakland. The Bay at this point is between 10 and 12 miles in width. The Coast Range, running in a northwest-southeast direction separates the Bay from the Pacific Ocean on the west and from the inland valleys on the east. This range has an average elevation between 1500 and 2000 feet with a few peaks as high as 3500 feet.

To the southeast the Bay ends but the lowlands surrounding it continue into the Santa Clara Valley. To the northwest, the Bay is connected with the Pacific Ocean by the Golden Gate; it also connects with San Pablo Bay and inland waters to the northwest, which makes it possible for planes to fly from the Oakland Airport toward the Sacramento and San Joaquin Valleys at times when other routes are closed by low clouds.

SMOKE SOURCES:

During the summer months visibilities below three miles are a rare occurrence, and when they do occur they usually persist for only a few hours. Winter conditions, however, may bring prevailing winds from the southeast for periods in excess of 24 hours; whenever these winds occur simultaneously with heavy burning at the dump, visibility at the Oakland Airport deteriorates to as low as one mile, and can remain at this figure for several hours.

The principal smoke source is a ring of industrial plants around the Bay, and especially, a line of plants about three miles to the east of the field. This smoke has little effect on the airport visibility except during prolonged periods with light winds and a strong temperature inversion. Under these conditions the smoke is trapped by the hills and the inversion, and eventually backs westward over the field; however, visibilities in these instances seldom are below three miles.

Daily normals of these elements (Exhibit 110) were published for 346 cities in the United States. This series is an update of similar prior publications that listed daily normals based on the 30-year periods 1921 through 1950 and 1931 through 1960, but did not include cooling-degree day normals.

EXHIBIT 110

CLIMATOGRAPHY OF THE UNITED STATES NO. 84

DAILY NORMALS OF TEMPERATURE AND HEATING AND COOLING DEGREE DAYS 1941-70

ROSWELL, NMEX AIR CENTER

	JANUARY						FEBRUARY						MARCH						APRIL						MAY						JUNE					
	TEMPERATURE			DEG	DAY		TEMPERATURE			DEG	DAY		TEMPERATURE			DEG	DAY		TEMPERATURE			DEG	DAY		TEMPERATURE			DEG	DAY		TEMPERATURE			DEG	DAY	
DAY	MAX	MIN	AVG	HDD	COD		MAX	MIN	AVG	HDD	COD		MAX	MIN	AVG	HDD	COD		MAX	MIN	AVG	HDD	COD		MAX	MIN	AVG	HDD	COD		MAX	MIN	AVG	HDD	COD	DAY
1	55	20	38	27	0		58	22	40	25	0		64	27	46	19	0		73	36	55	11	0		82	46	64	2	2		91	56	73	0	8	1
2	55	20	37	28	0		58	23	40	25	0		64	27	46	19	0		74	36	55	10	0		83	46	65	2	2		92	56	74	0	9	2
3	55	20	37	28	0		58	23	41	24	0		64	28	46	19	0		74	37	55	10	0		83	47	65	2	2		92	57	74	0	9	3
4	55	20	37	28	0		59	23	41	24	0		64	28	46	19	0		74	37	56	10	0		83	47	65	2	2		92	57	75	0	10	4
5	54	20	37	28	0		59	23	41	24	0		65	28	46	19	0		75	38	56	9	0		83	47	65	2	2		93	57	75	0	10	5
6	54	20	37	28	0		59	23	41	24	0		65	28	47	18	0		75	38	57	9	0		84	47	66	2	2		93	57	75	0	10	6
7	54	20	37	28	0		59	23	41	24	0		65	28	47	18	0		76	38	57	9	1		84	48	66	1	2		93	58	75	0	10	7
8	54	20	37	28	0		60	24	42	23	0		65	29	47	18	0		76	39	57	8	1		84	48	66	1	2		93	58	76	0	11	8
9	55	20	37	28	0		60	24	42	23	0		65	29	47	18	0		76	39	58	8	1		84	48	66	1	2		94	58	76	0	11	9
10	55	20	37	28	0		60	24	42	23	0		66	29	47	18	0		77	39	58	8	1		85	49	67	1	2		94	59	76	0	11	10
11	55	20	38	27	0		60	24	42	23	0		66	29	48	17	0		77	40	58	7	1		85	49	67	1	3		94	59	76	0	11	11
12	55	20	38	27	0		61	24	43	22	0		66	30	48	17	0		77	40	59	7	1		85	49	67	1	3		94	59	77	0	12	12
13	55	20	38	27	0		61	25	43	22	0		67	30	48	17	0		78	41	59	7	1		85	49	67	1	3		94	60	77	0	12	13
14	55	21	38	27	0		61	25	43	22	0		67	30	48	17	0		78	41	59	6	1		86	50	68	1	3		95	60	77	0	12	14
15	55	21	38	27	0		61	25	43	22	0		67	30	49	16	0		78	41	60	6	1		86	50	68	0	3		95	60	77	0	12	15
16	55	21	38	27	0		61	25	43	22	0		67	31	49	16	0		79	42	60	6	1		86	50	68	0	4		95	60	77	0	13	16
17	55	21	38	27	0		61	25	43	22	0		68	31	49	16	0		79	42	60	5	1		86	51	69	0	4		95	60	78	0	13	17
18	55	21	38	27	0		62	25	44	21	0		68	31	50	15	0		79	42	61	5	1		87	51	69	0	4		95	61	78	0	13	18
19	55	21	38	27	0		62	26	44	21	0		68	31	50	15	0		79	43	61	5	1		87	51	69	0	4		95	61	78	0	13	19
20	55	21	38	27	0		62	26	44	21	0		69	32	50	15	0		80	43	61	5	1		87	52	70	0	5		95	61	78	0	13	20
21	56	21	38	27	0		62	26	44	21	0		69	32	50	15	0		80	43	62	4	1		88	52	70	0	5		95	61	78	0	13	21
22	56	21	38	27	0		63	26	44	21	0		69	32	51	14	0		80	43	62	4	1		88	52	70	0	5		95	61	78	0	13	22
23	56	21	39	26	0		63	26	45	20	0		70	33	51	14	0		81	44	62	4	1		88	53	71	0	6		95	62	78	0	13	23
24	56	21	39	26	0		63	26	45	20	0		70	33	52	13	0		81	44	62	4	1		89	53	71	0	6		95	62	79	0	14	24
25	56	22	39	26	0		63	27	45	20	0		70	33	52	13	0		81	44	63	4	1		89	53	71	0	6		96	62	79	0	14	25
26	56	22	39	26	0		63	27	45	20	0		71	34	52	13	0		81	45	63	3	1		89	54	71	0	6		96	62	79	0	14	26
27	57	22	39	26	0		63	27	45	20	0		71	34	53	13	0		82	45	63	3	1		90	54	72	0	7		95	62	79	0	14	27
28	57	22	39	26	0		64	27	45	20	0		72	35	53	12	0		82	45	64	3	1		90	54	72	0	7		95	62	79	0	14	28
29	57	22	40	25	0								72	35	53	12	0		82	45	64	3	2		90	55	73	0	8		95	63	79	0	14	29
30	57	22	40	25	0								72	35	54	11	0		82	46	64	2	2		91	55	73	0	8		95	63	79	0	14	30
31	57	22	40	25	0								73	36	54	11	0								91	55	73	0	8							31

MONTHLY NORMALS		MONTHLY NORMALS		MONTHLY NORMALS		MONTHLY NORMALS		MONTHLY NORMALS		MONTHLY NORMALS	
MAX	55.4	MAX	60.9	MAX	67.7	MAX	78.2	MAX	86.4	MAX	94.2
MIN	20.8	MIN	24.8	MIN	30.9	MIN	41.2	MIN	50.5	MIN	59.8
MEAN	38.1	MEAN	42.9	MEAN	49.3	MEAN	59.7	MEAN	68.5	MEAN	77.0
HEATING	834	HEATING	619	HEATING	487	HEATING	185	HEATING	20	HEATING	0
COOLING	0	COOLING	0	COOLING	0	COOLING	26	COOLING	128	COOLING	360

09/07/73

This publication is issued for 49 states and for Puerto Rico, but was not prepared or published for Hawaii. It presents sequential tables of monthly and annual divisional averages of temperature (Exhibit 111) and precipitation (Exhibit 112), and a map showing the geographic boundaries of each Climatic Division (Exhibit 113). Each value shown in the tables is the simple arithmetic average of the data from all stations in the division that furnished both temperature and precipitation for that month. Each state is divided into geographic areas (up to 10) called Climatic Divisions, that represent, as nearly as possible, homogeneous climatic regimes. State averages were not computed or published because of the great dissimilarity between divisional climatic regimes in many states.

A similar publication containing these data was prepared and published for the period 1931-1960.

EXHIBIT 111

MONTHLY AND ANNUAL DIVISIONAL AVERAGES
TEMPERATURE (°F)

DIVISIONS **COLORADO**

ARKANSAS DRAINAGE BASIN 01

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
1941	30.3	34.7	36.1	45.3	57.7	62.8	68.4	68.4	60.1	50.3	40.1	31.2	48.8
1942	26.6	24.9	34.6	48.5	55.6	64.2	69.8	68.3	59.8	49.9	41.4	32.2	48.0
1943	30.1	37.2	35.7	52.8	53.3	65.5	71.8	71.8	61.0	49.5	39.0	29.0	49.7
1944	28.4	31.7	35.0	41.5	56.1	65.1	69.1	69.6	62.1	52.1	38.9	30.3	48.3
1945	29.8	32.8	40.3	42.6	55.8	61.2	69.3	69.3	59.6	51.8	39.4	27.1	48.3
1946	29.0	33.8	42.2	53.5	52.4	67.2	71.7	68.6	62.5	50.0	31.9	35.0	49.8
1947	28.3	29.9	35.6	45.6	54.9	61.7	69.9	69.6	64.1	53.7	32.6	29.5	47.9
1948	26.1	26.5	29.0	50.3	56.3	64.4	70.4	69.2	64.9	50.5	34.0	30.6	47.7
1949	19.6	29.4	38.2	46.5	56.1	63.9	70.4	68.1	61.5	49.2	46.0	31.3	48.4
1950	30.2	36.3	37.6	47.9	54.8	67.1	68.0	66.6	59.6	57.3	38.2	34.5	49.8
1951	26.5	33.4	35.4	44.0	56.2	60.9	72.0	69.4	60.6	48.7	35.1	29.2	47.6
1952	32.5	32.3	33.9	46.7	56.5	71.7	71.6	71.0	63.3	51.7	32.2	29.5	49.4
1953	36.9	32.5	42.7	44.7	53.7	70.2	72.8	69.2	64.4	52.6	40.7	28.6	50.8
1954	32.9	41.9	36.2	52.8	56.1	69.3	74.3	70.7	65.7	52.2	42.4	32.8	52.3
1955	28.3	27.5	38.2	48.4	56.9	63.3	73.0	71.0	63.4	53.4	36.7	34.2	49.5
1956	31.8	27.1	38.2	45.7	61.0	70.9	70.8	68.5	65.1	54.1	35.1	33.1	50.1
1957	26.8	39.0	38.0	43.0	53.4	64.5	72.4	70.4	60.3	51.6	34.4	36.0	49.2
1958	29.8	34.6	30.9	44.3	60.6	68.0	70.0	71.5	64.3	52.2	39.9	34.1	50.0
1959	27.8	31.2	37.0	46.0	57.5	68.7	70.4	70.9	59.9	47.3	37.1	33.5	48.9
1960	25.6	22.0	36.2	50.1	56.2	67.1	69.8	71.0	63.1	51.0	40.4	28.5	48.4
1961	29.6	33.4	38.2	45.4	57.0	65.9	69.5	69.1	57.4	50.0	35.0	26.2	48.1
1962	22.7	34.7	34.8	49.7	59.4	64.2	69.5	70.7	62.0	54.1	41.5	34.1	49.8
1963	21.0	36.0	39.0	51.0	60.4	67.9	74.1	69.9	66.4	57.6	42.2	27.6	51.1
1964	29.7	25.5	33.2	46.2	57.8	65.3	74.2	68.8	61.4	51.7	38.2	30.5	48.5
1965	33.8	29.3	28.6	49.3	56.8	63.0	70.8	66.4	56.2	52.5	43.5	33.7	48.7
1966	23.7	26.2	40.8	46.2	58.2	66.3	73.4	66.9	61.6	49.5	40.7	28.8	48.5
1967	32.1	32.5	43.0	49.1	52.9	62.3	69.2	65.5	59.5	51.4	38.3	24.9	48.4
1968	29.0	32.1	38.2	43.6	53.1	67.2	69.5	66.4	59.8	52.1	35.8	28.2	47.9
1969	33.5	33.4	29.8	49.8	57.7	61.5	72.1	70.9	62.1	43.0	37.8	31.8	48.6
1970	28.5	36.3	32.8	42.9	58.2	64.6	71.3	71.6	59.4	45.3	38.8	33.1	48.6
NORMAL	28.7	31.9	36.3	47.1	56.4	65.5	71.0	69.3	61.7	51.2	38.2	31.0	49.0

EXHIBIT 112

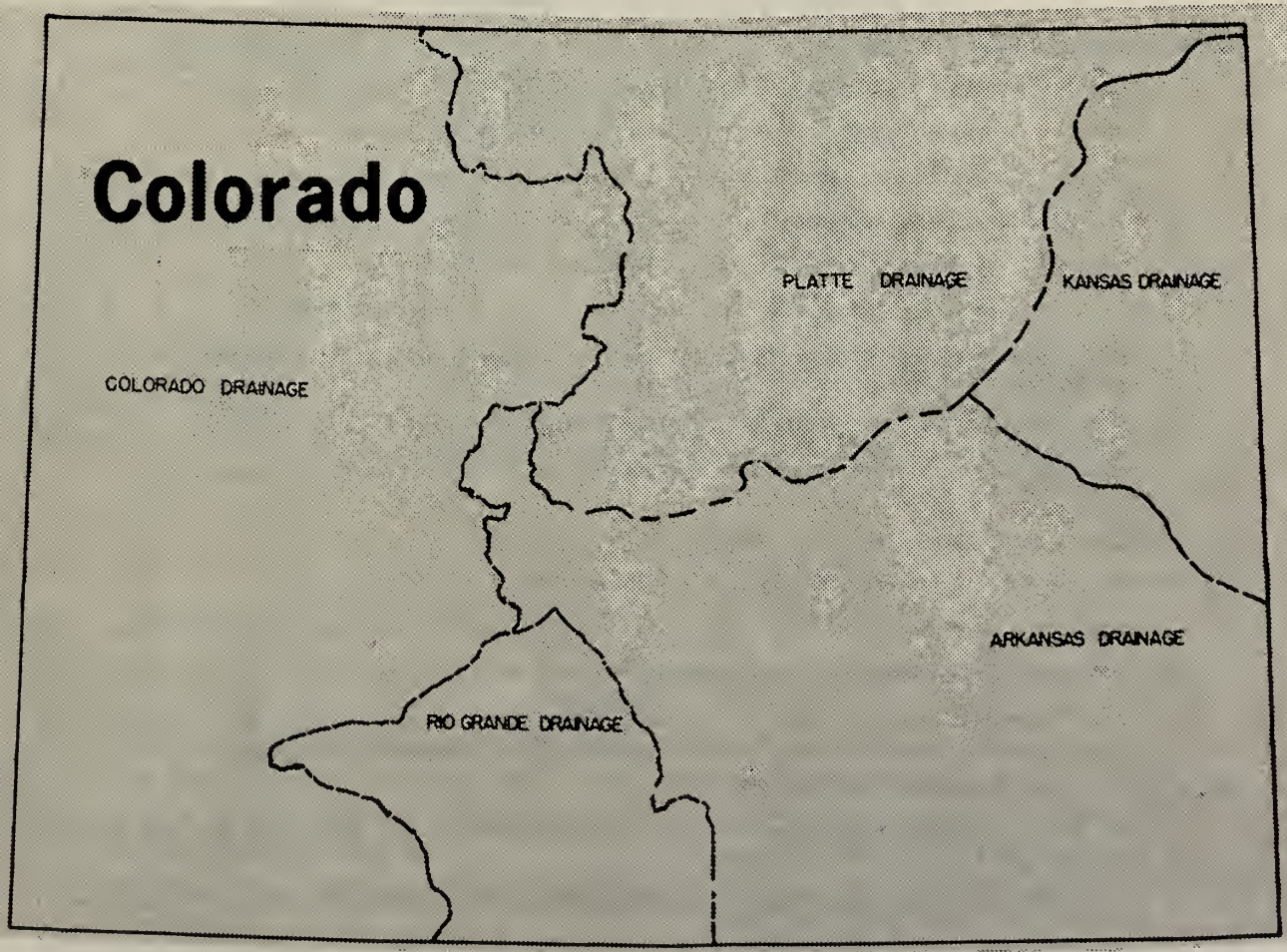
MONTHLY AND ANNUAL DIVISIONAL AVERAGES
PRECIPITATION (INCHES)

DIVISIONS **COLORADO**

ARKANSAS DRAINAGE BASIN 01

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
1941	0.65	0.23	1.98	2.40	3.15	2.28	3.34	2.55	3.15	2.86	0.20	0.52	23.31
1942	0.37	0.84	1.22	5.81	0.54	3.02	1.51	2.30	2.24	2.84	0.19	0.75	21.63
1943	0.32	0.43	0.63	1.13	2.10	1.16	1.71	2.71	0.29	0.29	0.46	0.88	12.11
1944	1.06	0.27	1.40	4.20	3.28	0.78	2.89	1.11	0.32	1.10	0.64	0.54	17.59
1945	0.86	0.58	0.35	2.18	1.38	1.59	2.86	4.13	1.03	0.79	0.20	0.28	16.23
1946	0.54	0.37	1.38	1.22	2.22	1.04	1.99	3.14	0.54	1.55	3.18	0.12	17.29
1947	0.45	0.66	0.98	1.69	3.48	2.51	2.41	2.09	0.78	1.15	0.34	0.76	17.30
1948	1.26	1.08	1.72	0.92	2.42	2.36	1.36	2.23	0.58	0.23	0.44	0.40	15.00
1949	0.72	0.32	1.20	1.23	2.72	3.75	2.88	1.48	0.61	1.06	0.08	0.11	16.16
1950	0.33	0.37	0.53	0.75	1.01	1.33	3.26	1.87	1.77	0.22	0.40	0.24	12.08
1951	0.77	0.39	0.70	1.15	2.49	2.27	1.44	2.59	0.52	0.95	0.85	0.64	14.76
1952	0.31	0.48	1.01	2.11	1.70	0.22	1.27	2.47	0.93	0.03	0.87	0.38	11.78
1953	0.28	0.39	0.95	1.36	2.30	0.73	2.49	2.50	0.12	0.97	1.04	0.83	13.96
1954	0.28	0.26	0.57	0.38	1.82	0.66	2.45	2.00	0.69	1.17	0.34	0.44	11.06
1955	0.16	0.65	0.53	0.85	4.52	0.80	1.30	2.76	0.86	0.23	0.39	0.23	13.28
1956	0.68	0.45	0.68	1.30	1.35	0.78	2.43	1.75	0.08	0.27	0.76	0.35	10.88
1957	0.60	0.26	1.28	4.11	3.97	1.90	2.72	1.82	0.77	1.21	1.51	0.19	20.34
1958	0.53	0.48	1.43	1.32	2.77	1.70	2.91	1.70	0.79	0.66	0.50	0.48	15.27
1959	0.85	0.64	1.15	1.39	2.11	1.58	1.23	2.16	1.91	2.08	0.34	0.33	15.77
1960	0.97	1.52	0.74	1.27	1.05	1.09	2.33	0.64	1.15	2.47	0.28	0.96	14.47
1961	0.13	0.96	1.28	0.89	1.61	2.63	2.82	3.16	1.69	0.93	0.94	0.56	17.60
1962	0.71	0.36	0.68	1.08	1.47	1.86	2.73	0.61	0.68	0.62	0.68	0.26	11.74
1963	0.46	0.45	0.80	0.09	0.78	1.63	1.92	3.42	1.76	0.47	0.25	0.46	12.09
1964	0.21	0.96	0.83	0.86	2.66	0.70	1.44	1.46	0.93	0.09	0.94	0.47	11.55
1965	0.37	0.72	1.00	1.28	1.42	4.77	3.70	3.34	1.68	1.15	0.16	0.51	20.10
1966	0.52	0.48	0.13	0.99	0.70	1.22	2.90	2.76	1.51	0.44	0.16	0.43	12.24
1967	0.43	0.53	0.36	1.09	2.73	2.30	3.00	2.51	1.08	0.82	0.39	1.10	16.34
1968	0.21	0.58	0.84	1.26	1.50	0.82	3.82	2.36	0.72	0.46	0.67	0.39	13.63
1969	0.20	0.19	1.25	1.42	2.87	2.65	2.61	2.19	1.81	2.62	0.36	0.81	18.98
1970	0.17	0.21	1.64	1.24	0.91	1.30	2.43	2.01	1.87	1.50	0.61	0.05	13.94
NORMAL	0.51	0.54	0.97	1.57	2.10	1.71	2.39	2.26	1.10	1.04	0.61	0.48	15.28

EXHIBIT 113



This publication, intended mainly as an aid to aviation, has been prepared for 163 airports for which LOCAL CLIMATOLOGICAL DATA is published. It is based upon the 10-year period 1965 through 1974. It presents a "Capsule Summary of Aviation Weather" (Exhibit 114), a table of monthly and annual means and extremes (Exhibit 115), sequential tables of monthly and annual values of average daily maximum and minimum temperature, monthly average temperature, total precipitation, total snowfall, total heating-degree days and total cooling-degree days (Exhibit 116), and flying weather statistics (Exhibit 117). It also includes, based upon eight observations per day (Exhibit 118), monthly and annual percent frequencies of ceiling, visibility, and weather conditions by wind direction, wind direction versus wind speed for both ALL WEATHER and INSTRUMENT FLIGHT RULES (IFR) conditions, and the mean number of days with various weather conditions for each of the eight observational times (0000, 0300, ..., 2100 GMT, expressed in LST). The recent station location history (Exhibit 48) is also presented.

This publication is a revision of the CLIMATOGRAPHY OF THE UNITED STATES NO. 82, SUMMARY OF HOURLY OBSERVATIONS (reference pages 92 through 96) issued in the early 1960's and which contain data summaries based upon 24 observations a day.

EXHIBIT 114

CAPSULE SUMMARY OF AVIATION WEATHER

Flying Weather (Table 9): Ceiling less than 1500 feet and/or visibility less than 3 miles.

-- Month (all hours) with greatest percent frequency of occurrence: January (26.0%)

-- Month (all hours) with lowest percent frequency of occurrence: October (7.2%)

-- 3-hourly observation time (annual) with greatest percent frequency of occurrence: 1000 (18.8%)

-- 3-hourly observation time (annual) with lowest percent frequency of occurrence: 2200 (10.9%)

Ceiling, Visibility, and Weather by Wind Direction (Table 10 - Annual):

-- Percent frequency of ceilings over 9500 feet (10,000 feet or greater): 50.0%

-- Prevailing surface wind direction with ceiling over 9500 feet and percent frequency of occurrence: S (13.6%)

-- Percent frequency of visibilities over 6 miles (7 miles or greater): 69.2%

-- Prevailing surface wind direction with visibility over 6 miles and percent frequency of occurrence: S (15.6%)

Wind Direction vs. Wind Speed (Table 11 - Annual):

All Weather - Table A (percent frequency of all observations):

-- Prevailing wind direction: S (20.8%) wind speed (all directions) greater than 16 knots: 10.6%

IFR (Instrument Flight Rules) - Table B (percent frequency of IFR observations):

-- Prevailing wind direction: W (17.6%) wind speed (all directions) greater than 16 knots: 13.0%
(17.6% = percent frequency from W direction X 100% ÷ total IFR percent frequency)

Weather Condition by Hour (Table 12 - Annual):

-- Time of day with most obstructions to vision and mean number of days with visibility less than 7 miles at this hour: 1000 (117.8 days)

-- Time of day with least obstructions to vision and mean number of days with visibility less than 7 miles at this hour: 0100 (65.7 days)

TABLE 1. MEANS AND EXTREMES FOR PERIOD 1965 - 1974

ERIE, PA
ERIE INTL AP

LATITUDE 4205N LONGITUDE 08011W TIME ZONE : EASTERN ELEVATION 731 FT

MONTH	TEMPERATURE (°F) MEAN DAILY MAX	MEAN DAILY MIN	MEAN MONTHLY	EXTREME MAX	EXTREME MIN	PRECIPITATION (INCHES) TOTAL MEAN	TOTAL MAX	TOTAL MIN	TOTAL GREATEST DAILY	SNOWFALL MEAN	SNOWFALL MAX	SNOWFALL GREATEST DAILY	SNOWFALL MEAN DEPTH	MEAN RELATIVE HUMIDITY (%) LST 01	07	13	19	MEAN VAPOR PRESSURE (IN. OF HG)	MEAN DEW PT (°F)	PRESSURE ALTITUDE (FT) MEAN	PRESSURE ALTITUDE (FT) 99.95% LEVEL	SURFACE WIND PVLG DIR (16 PT)	SURFACE WIND SPEED (KT) MEAN	SURFACE WIND SPEED (KT) MAX	MEAN SKY COVER (%)
JAN	32	19	26	64	-13	2.2	3.9	.9	.8	21	30	9	3	74	75	71	73	.11	18	650	1450	S	12.1	35+	85
FEB	32	17	25	62	-12	1.9	3.0	.7	1.2	18	32	9	2	75	77	70	74	.11	17	600	1400	S	11.2	45+	76
MAR	41	26	34	79	0	2.7	5.0	1.4	1.8	13	27	12	1	75	77	67	71	.15	25	650	1550	S	10.4	39+	72
APR	54	36	45	80	17	3.3	5.3	1.7	1.5	2	5	2	0	73	74	61	63	.21	33	600	1450	S	10.4	40+	66
MAY	63	45	54	87	26	3.6	5.5	2.0	2.2	0	T	T	0	76	76	63	63	.30	43	600	1200	S	9.3	29+	63
JUN	74	56	65	91	32	4.2	7.5	2.5	1.8	0	0	0	0	79	79	64	64	.45	55	750	1100	S	8.7	32+	57
JUL	78	60	69	94	46	3.2	7.7	1.1	2.8	0	0	0	0	80	80	63	64	.52	59	600	1000	S	8.1	28+	54
AUG	77	60	68	92	41	3.1	4.5	1.8	1.6	0	0	0	0	83	85	65	68	.52	59	600	1000	S	8.2	30+	51
SEP	71	54	62	89	33	3.6	7.1	2.0	1.8	0	0	0	0	81	84	66	74	.44	54	650	1150	S	8.9	39+	62
OCT	60	44	52	82	26	2.9	3.8	1.6	1.3	0	2	2	0	75	77	64	73	.29	42	650	1200	S	10.3	34+	66
NOV	46	35	40	73	15	4.3	5.3	2.8	1.2	13	36	15	T	77	77	71	75	.20	33	600	1400	S	11.6	34+	88
DEC	38	27	32	68	2	3.3	4.3	2.2	1.5	17	31	9	1	76	77	74	76	.15	25	600	1400	S	11.6	31+	91
ANN	55	40	48	94	-13	38.4	7.7	.7	2.8	85	36	15	1	77	78	67	70	.29	39	600	1350	S	10.1	45+	69

TABLE 1 A. MEAN NUMBER OF DAYS WITH OCCURRENCE OF:

MONTH	PRECIPITATION (INCHES) TOTAL = OR > .01	.1	.5	1.0	SNOWFALL = OR > .5	1.0	2.0	4.0	FOG <7 MI VSBY	FOG ≤1/4 MI VSBY	THUNDER-STORMS	HAIL	RAIN	SNOW	ICE PELLETS (SLEET)	GLAZE	DUST STORM VSBY <5/8 MI	SMOKE OR HAZE	BLOWING SNOW	TEMPERATURE (°F) MAX = OR > 90	65	32	MIN = OR < 45	32	0
JAN	19	7	1	0	10	7	3	1	11	1	#	0	9	21	1	2	0	14	6	0	0	16	31	28	2
FEB	16	6	1	#	9	6	3	1	9	1	1	#	7	20	1	1	0	13	5	0	0	14	28	26	2
MAR	16	8	1	#	6	4	2	1	13	3	2	#	12	16	1	1	0	14	2	0	2	24	30	25	#
APR	15	8	2	#	2	1	#	0	10	2	3	#	17	6	#	#	0	14	#	0	7	30	25	12	0
MAY	13	9	2	1	0	0	0	0	12	2	5	#	18	1	#	0	0	14	0	0	14	31	16	1	0
JUN	11	8	3	1	0	0	0	0	11	1	6	0	16	0	0	0	0	19	0	1	26	30	2	#	0
JUL	10	5	2	1	0	0	0	0	9	1	7	#	13	0	0	0	0	21	0	#	31	31	0	0	0
AUG	10	7	2	1	0	0	0	0	11	1	7	0	13	0	0	0	0	20	0	#	31	31	1	0	0
SEP	11	8	2	1	0	0	0	0	12	1	4	#	15	0	0	0	0	17	0	0	23	30	5	0	0
OCT	13	8	2	#	#	#	0	0	11	#	2	1	17	3	1	0	0	13	0	0	10	31	18	3	0
NOV	17	11	3	1	4	3	2	1	13	1	3	#	18	11	1	#	0	12	2	0	1	29	28	12	0
DEC	19	9	1	#	8	5	3	1	12	1	1	#	14	18	2	2	0	12	3	0	#	22	31	24	0
ANN	169	92	22	7	40	27	13	5	134	13	39	2	168	94	7	6	0	182	18	1	145	319	214	131	4

NOTES

1. T OR # INDICATES LESS THAN 0.5 DAY, 0.5%, 0.5 OR 0.05 INCH, AS APPLICABLE.
2. TOTAL PRECIPITATION EQUALS RAIN PLUS WATER EQUIVALENT OF SNOW AND ICE PELLETS (SLEET).
3. THE VALUE LISTED UNDER PRESSURE ALTITUDE (FT) 99.95% LEVEL INDICATES VALUE EXCEEDED ONLY 0.05% OF THE TIME.
4. MEAN SNOW DEPTH OBSERVED AT 1200 GMT.
5. SURFACE WIND SPEED MAX IS FASTEST NAUTICAL MILE (THE SPEED OF A NAUTICAL MILE OF WIND OCCURRING IN THE SHORTEST TIME INTERVAL). AN ASTERISK (*) INDICATES PEAK GUST, WHILE A PLUS (+) INDICATES THE FASTEST 1-MINUTE VALUE.
6. ● FOR PREVAILING DIRECTION, NUMBER OF CALMS EXCEEDS NUMBER OF WINDS IN LISTED DIRECTION.

TABLE 2. AVERAGE DAILY MAXIMUM TEMPERATURE (°F)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1965	32.2	35.3	35.4	50.1	71.1	74.1	76.5	76.5	74.4	57.7	49.6	41.2	56.2
1966	29.2	32.4	45.6	52.0	60.6	77.1	81.4	77.9	69.1	59.7	50.2	37.6	56.1
1967	39.2	32.6	42.4	56.8	58.1	80.9	76.7	74.8	69.5	61.3	42.0	40.0	56.1
1968	30.6	28.3	44.9	58.1	60.6	74.6	78.8	78.6	73.7	62.7	48.5	36.5	56.3
1969	33.6	32.4	39.0	57.1	64.0	71.1	76.9	78.8	69.8	58.5	43.5	30.5	54.6
1970	24.0	31.3	34.5	54.2	67.4	73.2	77.3	76.9	71.0	59.4	46.1	36.6	54.3
1971	28.7	33.7	37.3	49.3	62.2	74.7	76.5	73.8	70.9	64.5	45.4	42.6	55.0
1972	33.9	30.3	38.4	48.7	64.4	67.2	76.4	74.4	69.5	53.9	41.5	38.9	53.1
1973	36.0	31.3	50.9	54.1	60.0	74.8	78.5	77.4	71.5	62.5	48.7	36.9	56.9
1974	36.6	31.4	42.7	56.9	62.8	72.3	76.8	76.8	66.8	56.9	47.5	35.0	55.2
MEAN	32.4	31.8	41.1	53.7	63.1	74.0	77.6	76.6	70.6	59.7	46.3	37.6	55.4
MAX	39.2	35.3	50.9	58.1	71.1	80.9	81.4	78.8	74.4	64.5	50.2	42.6	56.9
MIN	24.0	28.3	34.5	48.7	58.1	67.2	76.4	73.8	66.8	53.9	41.5	30.5	53.1

TABLE 3. SNOWFALL (INCHES)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1965	16.8	13.7	26.8	2.2	.0	.0	.0	.0	.0	T	18.4	5.3	83.2
1966	29.9	8.7	17.7	4.8	T	.0	.0	.0	.0	.0	7.2	31.4	99.7
1967	6.0	13.5	8.8	1.7	T	.0	.0	.0	.0	T	36.3	13.3	79.6
1968	24.2	24.6	9.1	.4	.0	.0	.0	.0	.0	T	9.8	18.8	86.9
1969	26.1	13.6	9.4	2.0	.0	.0	.0	.0	.0	1.2	11.4	21.9	85.6
1970	19.7	21.9	8.6	.9	.0	.0	.0	.0	.0	T	18.6	23.6	93.3
1971	26.8	21.4	26.8	2.8	.0	.0	.0	.0	.0	T	14.6	9.3	101.7
1972	27.3	32.1	7.9	1.1	.0	.0	.0	.0	.0	.6	6.6	18.5	94.1
1973	7.9	12.6	5.7	1.8	T	.0	.0	.0	.0	T	.4	10.8	39.2
1974	21.2	17.9	13.2	5.1	T	.0	.0	.0	.0	2.3	2.9	20.1	82.7
MEAN	20.6	18.0	13.4	2.3	.0	.0	.0	.0	.0	.4	12.6	17.3	84.6
MAX	29.9	32.1	26.8	5.1	T	.0	.0	.0	.0	2.3	36.3	31.4	101.7
MIN	6.0	8.7	5.7	.4	.0	.0	.0	.0	.0	.0	.4	5.3	39.2

TABLE 4. AVERAGE DAILY MINIMUM TEMPERATURE (°F)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1965	19.4	17.9	23.5	33.1	50.9	54.9	58.5	59.9	58.1	43.3	35.2	30.8	40.5
1966	16.3	20.7	29.5	37.0	42.6	57.8	62.1	60.7	53.0	42.8	36.3	26.9	40.5
1967	26.4	16.3	26.7	38.4	41.1	61.3	60.9	58.3	50.4	44.8	31.8	27.9	40.4
1968	16.3	13.1	27.9	38.5	44.6	55.3	61.3	62.5	58.1	47.4	36.3	24.5	40.5
1969	20.4	18.9	24.6	37.3	45.3	54.1	61.1	60.4	53.5	41.5	33.0	21.0	39.3
1970	9.6	14.8	22.2	36.0	48.9	54.5	60.5	59.0	54.5	46.6	34.7	24.9	38.9
1971	15.3	20.9	22.7	31.8	41.6	57.2	57.2	55.6	57.2	49.5	33.1	29.1	39.3
1972	19.9	15.5	21.2	31.3	46.8	52.3	60.4	57.7	52.7	40.5	33.1	27.7	38.3
1973	23.2	16.2	33.5	37.9	45.0	57.6	60.9	61.8	53.7	47.1	36.9	26.5	41.7
1974	23.4	17.7	28.0	38.3	43.1	54.0	58.5	59.4	50.6	39.6	34.5	26.9	39.5
MEAN	19.0	17.2	26.0	36.0	45.0	55.9	60.1	59.5	54.2	44.3	34.5	26.6	39.9
MAX	26.4	20.9	33.5	38.5	50.9	61.3	62.1	62.5	58.1	49.5	36.9	30.8	41.7
MIN	9.6	13.1	21.2	31.3	41.1	52.3	57.2	55.6	50.4	39.6	31.8	21.0	38.3

TABLE 5. HEATING DEGREE DAYS

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1965	1209	1072	1093	696	174	105	26	44	76	441	673	892	6501
1966	1302	1068	842	609	417	64	5	10	151	420	644	1006	6538
1967	993	1137	941	518	471	18	25	32	164	374	835	955	6463
1968	1280	1277	881	494	377	81	20	26	55	333	671	1063	6558
1969	1169	1093	1020	528	324	145	20	20	169	462	796	1211	6957
1970	1488	1169	1129	605	235	103	18	18	125	366	731	1056	7043
1971	1324	1048	1078	723	404	68	32	55	97	242	763	895	6729
1972	1172	1217	1082	742	287	184	55	47	144	546	820	976	7272
1973	1090	1146	697	568	379	40	9	18	141	309	658	1022	6077
1974	1077	1128	915	521	373	101	32	9	204	511	713	1046	6630
MEAN	1210	1136	968	600	344	91	24	28	133	400	730	1012	6677

TABLE 6. AVERAGE TEMPERATURE (°F)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1965	25.8	26.6	29.5	41.6	61.0	64.5	67.5	68.2	66.3	50.5	42.4	36.0	48.4
1966	22.8	26.6	37.6	44.5	51.6	67.5	71.8	69.3	61.1	51.3	43.3	32.3	48.3
1967	32.8	24.2	34.6	47.6	49.6	71.1	68.8	66.6	60.0	53.1	36.9	34.0	48.3
1968	23.5	20.7	36.4	48.3	52.6	65.0	70.1	70.6	65.9	55.1	42.4	30.5	48.4
1969	27.0	25.7	31.8	47.2	54.7	62.6	69.0	69.6	61.7	50.0	38.3	25.8	47.0
1970	16.8	23.1	28.4	45.1	58.2	63.9	68.9	68.0	62.8	53.0	40.4	30.8	46.6
1971	22.0	27.3	30.0	40.6	51.9	66.0	66.9	64.7	64.1	57.0	39.3	35.9	47.2
1972	26.9	22.9	29.8	40.0	55.6	59.8	68.4	66.1	61.1	47.2	37.3	33.3	45.7
1973	29.6	23.8	42.2	46.0	52.5	66.2	69.7	69.6	62.6	54.8	42.8	31.7	49.3
1974	30.0	24.6	35.4	47.6	53.0	63.2	67.7	68.1	58.7	48.3	41.0	31.0	47.4
MEAN	25.7	24.6	33.6	44.9	54.1	65.0	68.9	68.1	62.4	52.0	40.4	32.1	47.7
MAX	32.8	27.3	42.2	48.3	61.0	71.1	71.8	70.6	66.3	57.0	43.3	36.0	49.3
MIN	16.8	20.7	28.4	40.0	49.6	59.8	66.9	64.7	58.7	47.2	36.9	25.8	45.7

TABLE 7. COOLING DEGREE DAYS

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1965	0	0	0	0	57	98	112	153	123	0	0	0	543
1966	0	0	0	2	12	146	223	149	39	3	0	0	574
1967	0	0	2	3	0	209	150	90	20	12	0	0	486
1968	0	0	0	0	1	87	187	205	89	33	0	0	602
1969	0	0	0	4	10	81	150	170	76	5	0	0	496
1970	0	0	0	13	28	76	145	119	62	3	0	0	446
1971	0	0	0	0	7	105	96	55	75	3	0	0	341
1972	0	0	0	0	2	32	165	88	35	0	0	0	322
1973	0	0	0	6	0	84	163	167	76	1	0	0	497
1974	0	0	0	5	9	55	120	114	23	0	0	0	326
MEAN	0	0	0	3	13	97	151	131	62	6	0	0	463

TABLE 8. TOTAL PRECIPITATION (INCHES)

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1965	3.86	3.00	3.55	1.66	3.40	3.75	3.48	2.68	2.24	3.84	4.27	2.68	38.41
1966	2.01	1.92	3.47	4.26	2.03	3.82	2.08	3.52	3.24	1.73	5.34	4.32	37.74
1967	.90	1.67	1.67	4.21	3.15	2.49	4.79	4.48	4.25	2.77	5.19	2.21	37.78
1968	2.98	1.13	1.69	2.64	3.06	2.63	2.34	2.76	2.93	3.40	4.71	4.06	34.33
1969	2.95	.73	1.43	5.27	5.49	4.88	3.65	1.75	1.99	3.02	2.99	2.43	36.58
1970	1.44	2.09	1.61	2.48	3.23	2.65	7.70	2.03	7.08	3.52	4.87	2.80	41.50
1971	1.63	2.05	1.85	1.81	2.20	2.83	2.67	3.46	3.51	3.48	4.51	4.06	34.06
1972	1.94	2.75	3.95	2.64	4.69	7.50	2.91	3.01	5.37	1.72	3.36	3.69	43.55
1973	1.72	2.00	3.18	2.71	4.57	6.28	1.55	3.96	2.22	3.56	2.83	3.46	38.04
1974	2.45	1.93	5.02	4.89	4.44	5.33	1.11	2.97	3.34	1.57	5.20	3.58	41.83
MEAN	2.19	1.93	2.74	3.26	3.63	4.22	3.23	3.06	3.62	2.86	4.33	3.33	38.38
MAX	3.86	3.00	5.02	5.27	5.49	7.50	7.70	4.48	7.08	3.84	5.34	4.32	43.55
MIN	.90	.73	1.43	1.66	2.03	2.49	1.11	1.75	1.99	1.57	2.83	2.21	34.06

NOTES

1. HEATING (COOLING) DEGREE DAYS = SUM OF NEGATIVE (POSITIVE) DEPARTURES OF AVERAGE DAILY TEMPERATURES FROM 65 °F.
2. T = TRACE – AN AMOUNT TOO SMALL TO MEASURE.
3. A MONTHLY PRECIPITATION AMOUNT MAY BE A TRACE; HOWEVER, IN CALCULATING THE 10 – YEAR MONTHLY MEAN, A TRACE IS CONSIDERED AS ZERO.
4. M = MISSING DATA. WHEN (M) APPEARS COLUMN MEANS ARE FOR NUMBER OF YEARS OF AVAILABLE DATA.

ERIE, PA
ERIE INTL AP

PERIOD OF RECORD : 1965-74
29204 OBSERVATIONS

TABLE 9. FLYING WEATHER (PERCENT FREQUENCY OF OBSERVATIONS)

CEILING LESS THAN AND/OR VISIBILITY LESS THAN	HOUR (LST)	MONTH												ANN
		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1500 FEET 3 MILES	01	23.2	20.9	21.9	12.3	8.1	6.3	3.9	4.2	5.0	5.5	14.7	18.4	12.0
	04	24.2	24.8	20.3	12.7	13.6	9.7	6.1	6.5	8.3	8.1	16.7	22.9	14.4
	07	21.9	24.1	23.9	14.0	14.5	14.3	15.2	15.5	16.3	8.1	16.3	21.3	17.1
	10	33.2	30.5	28.7	12.7	13.2	13.7	11.0	14.2	14.3	7.7	18.7	28.7	18.8
	13	30.0	29.4	25.2	10.3	11.3	9.0	10.0	8.1	9.0	7.1	17.3	26.1	16.0
	16	31.9	23.4	23.9	10.7	9.7	8.0	5.8	9.4	9.7	9.0	20.7	29.0	15.9
	19	21.6	16.7	21.6	12.3	10.0	7.0	4.8	8.8	10.3	7.1	13.3	20.3	12.8
	22	21.6	19.1	17.7	15.0	8.1	4.0	1.9	3.9	4.0	4.8	13.7	17.7	10.9
	ALL	26.0	23.6	22.9	12.5	11.1	9.0	7.3	8.8	9.6	7.2	16.4	23.1	14.8
1000 FEET 3 MILES	01	16.1	16.7	18.4	10.3	5.8	5.0	2.6	2.3	3.0	4.2	8.3	15.2	9.0
	04	17.4	20.9	16.1	10.0	8.4	8.0	3.9	4.2	5.0	4.2	9.7	16.1	10.3
	07	16.8	19.1	20.6	10.7	12.3	11.0	11.9	12.9	13.0	5.8	9.7	14.5	13.2
	10	29.4	26.2	23.9	8.7	9.0	10.0	9.0	11.3	11.0	6.8	14.0	24.8	15.3
	13	26.5	23.8	22.0	8.3	8.1	7.7	9.7	5.8	7.3	4.2	13.3	20.3	13.0
	16	25.2	22.0	20.6	8.7	9.0	7.3	5.8	7.8	7.3	7.4	17.0	22.9	13.4
	19	17.4	14.5	20.0	11.3	9.4	6.7	4.5	8.1	7.7	5.2	9.3	13.9	10.7
	22	13.9	14.2	14.2	9.3	5.8	3.3	1.6	2.6	2.0	3.2	8.0	10.0	7.3
	ALL	20.3	19.7	19.5	9.7	8.5	7.4	6.1	6.9	7.0	5.1	11.2	17.2	11.5
400 FEET 1 MILE	01	3.2	3.2	6.1	3.7	2.9	1.0	.6	.6	.7	1.3	2.3	3.9	2.5
	04	3.2	4.3	6.5	3.3	2.9	2.0	.3	.6	.7	.6	2.7	4.5	2.6
	07	4.2	2.5	7.1	2.3	4.8	1.3	.6	.6	2.0	.3	2.0	4.2	2.7
	10	6.8	4.6	7.1	2.0	3.2	.3	.3	.3	.3	.6	2.7	4.8	2.8
	13	5.5	6.4	4.9	2.0	2.3	1.3	.3	.3	.3	.3	2.0	3.5	2.4
	16	5.8	4.6	8.1	2.7	2.3	.7	.3		.3	.6	3.0	2.9	2.6
	19	3.5	3.2	5.8	1.7	1.3	1.0	.3	.3		.6	1.0	3.9	1.9
	22	3.2	3.5	7.4	2.7	2.6				.3	1.6	2.0	1.3	2.1
	ALL	4.4	4.0	6.6	2.5	2.8	1.0	.4	.4	.6	.8	2.2	3.6	2.4
200 FEET 1/2 MILE	01	1.0	1.8	1.6	1.0	.6	.3		.3	.3	.3	1.7	1.0	.8
	04	.6	.7	2.3	1.7	1.6	.7	.3	.6			1.0	1.3	.9
	07	1.0	1.4	2.9	1.0	1.9	.3	.3	.3	.7		.7	1.6	1.0
	10	1.3		1.6	.7	.6					.3	1.0	1.3	.6
	13	.6	.7	1.6	.7	.3						.3	1.3	.5
	16	1.3	1.4	2.6	1.0	.6						1.0	.6	.7
	19	.6	.4	1.6	.3	.3					.6	.7	.3	.4
	22	1.3		3.2	1.3	.3				.3		.3	.3	.6
	ALL	1.0	.8	2.2	1.0	.8	.2	.1	.2	.2	.2	.8	1.0	.7
100 FEET 1/4 MILE	01		.7	1.3	.7		.3		.3	.3		.7		.4
	04			1.3	.3	1.0	.3		.3			.3	.6	.4
	07	.6	.4	1.6	.3	1.6	.3		.3	.7			.3	.5
	10			.6	.3	.3					.3	.3	.6	.2
	13		.4	1.0	.3							.3	1.0	.2
	16		.7	1.6		.6						.3	.3	.3
	19	.3		1.3	.3								.3	.2
	22			1.0						.3			.3	.1
	ALL	.1	.3	1.2	.3	.4	.1		.1	.2	.0	.3	.4	.3

.0 INDICATES VALUE LESS THAN 0.05%

THESE VALUES ARE BASED ON 3-HOURLY OBSERVATIONS

EXHIBIT 118

ERIE, PA
ERIE INTL AP

JANUARY

PERIOD OF RECORD 1965-74
2480 OBSERVATIONS

TABLE 10. CEILING, VISIBILITY, AND WEATHER BY WIND DIRECTION (PERCENT FREQUENCY OF OBSERVATIONS)

WIND DIR	CEILING (FEET)										VISIBILITY (MILES)						WEATHER							
	0	100	200 TO 300	400 TO 900	1000 TO 1400	1500 TO 1900	2000 TO 2900	3000 TO 4900	5000 TO 9500	OVER 9500	0 TO 3/16	1/4 TO 3/8	1/2 TO 3/4	1 TO 2 1/2	3 TO 6	OVER 6	RAIN AND/OR DRZL	FRZ RAIN AND/OR FRZ DRZL	SNOW AND/OR IP	FOG	FOG AND SMOKE	SMOKE AND/OR HAZE	TSTM	HAIL
N			.2	.4	.2	.4	.7	.4		.7			.2	.6	.6	1.7	.0		1.4	.7		.2		
NNE		.0	.1	.4	.1	.2	.0	.0	.1	.5			.2	.4	.3	.7	.1		.7	.5		.2		
NE		.0	.4	.6	.3	.4	.3	.1	.2	.8			.2	.8	.8	1.3	.3	.2	1.0	1.1		.2		
ENE		.0	.2	.7	.2	.3	.4	.2	.8	1.8	.0	.0	.2	.9	.7	2.7	.2	.3	1.3	1.0	.0	.4		
E				.0	.1	.2	.1	.2	.3	.9				.1	.1	1.6	.1	.2	.3	.1		.1		
ESE					.1	.0	.2	.1	.2	.9				.0	.2	1.2		.1	.2			.1		
SE				.0	.2	.1	.1	.3	.4	1.0				.1	.4	1.6	.2	.1	.3	.1		.3		
SSE			.0	.1	.1	.1	.3	.7	.9	2.5				.1	1.0	3.7	1.1		.2	.4		.4		
S			.1	.4	.8	1.0	1.5	2.7	2.4	8.6			.1	1.2	3.8	12.5	2.2		2.1	1.8		1.9		
SSW				.3	.4	1.3	2.0	1.6	.7	5.1			.0	.8	3.3	7.3	.7		2.7	.6		1.7		
SW			.0	.3	.9	1.5	2.2	1.6	.6	2.7			.2	1.5	2.7	5.6	.4		3.8	.6		1.2		
WSW		.2	.3	1.5	1.4	1.9	2.0	1.3	.2	1.5	.0	.2	.5	2.0	3.4	4.0	1.0	.0	4.7	1.5		1.2		
W		.1	.4	1.7	1.2	3.1	3.8	1.8	.2	1.0	.0	.2	.4	2.6	4.3	6.0	.8		6.5	1.9		1.3		
WNW		.0	.1	.8	1.3	2.1	2.6	1.0	.0	.4		.0	.4	1.6	2.6	3.8	.2	.0	5.3	.7		.4		
NW		.0		.4	.5	.7	1.3	.5		.2			.1	.5	1.2	1.9	.1		2.2	.3		.2		
NNW			.1	.2	.2	.6	.7	.2	.1	.5		.1	.0	.4	.4	1.6			1.0	.2		.1		
CALM			.0		.2	.0	.1		.0	.1			.0	.1	.1	.2	.0		.2	.2		.0		
TOT		.5	2.1	7.9	8.3	14.1	18.3	12.6	7.0	29.3	.1	.6	2.6	13.6	25.8	57.3	7.4	1.0	34.0	11.9	.0	9.8		

IP = ICE PELLETS (REPLACES SLEET AND SMALL HAIL)

TABLE 11. WIND DIRECTION VS. WIND SPEED (PERCENT FREQUENCY OF OBSERVATIONS)

A. ALL WEATHER

WIND DIR	WIND SPEED (KNOTS)										
	0-3	4-6	7-10	11-16	17-21	22-27	28-33	34-40	OVER 40	TOT	AVG SPEED
N	.0	.5	1.3	1.2	.1	.0				3.1	10.2
NNE		.3	.7	.5	.0					1.5	9.7
NE	.2	.6	.8	1.3	.2					3.0	10.2
ENE	.0	.7	1.9	1.5	.4					4.5	10.2
E	.1	.6	.9	.2						1.9	7.3
ESE	.2	.6	.5	.1						1.4	6.6
SE	.0	.8	.7	.5	.1	.0				2.2	8.9
SSE	.1	.6	.9	1.5	1.4	.3	.1			4.8	13.8
S	.2	2.6	4.7	6.5	3.2	.4				17.6	12.0
SSW	.2	1.0	2.5	4.6	2.7	.5				11.4	13.3
SW	.1	1.0	2.7	4.8	1.2	.1	.0			9.9	11.9
WSW	.0	.8	3.3	4.3	1.5	.3	.0			10.2	12.6
W	.0	.6	2.9	6.0	3.2	.7	.1			13.5	14.1
WNW	.2	.3	1.9	3.3	2.0	.6	.2			8.3	14.3
NW	.0	.4	1.2	1.5	.5	.0				3.6	11.7
NNW	.0	.5	.8	1.0	.1					2.5	10.2
CALM	.5									.5	
TOT	2.1	11.8	27.7	38.6	16.5	2.9	.4			100.0	12.2

ALL WEATHER: ALL WIND OBSERVATIONS

B. IFR

WIND DIR	WIND SPEED (KNOTS)										
	0-3	4-6	7-10	11-16	17-21	22-27	28-33	34-40	OVER 40	TOT	AVG SPEED
N		.1	.3	.5						.8	11.1
NNE		.0	.3	.2	.0					.6	10.8
NE	.0	.2	.4	.6	.1					1.3	11.3
ENE		.2	.4	.5	.2					1.3	11.4
E		.0	.1							.1	7.0
ESE			.0							.0	8.0
SE		.1		.0						.1	9.0
SSE			.1	.1	.0	.0				.3	14.5
S	.0	.1	.5	.5	.2	.0				1.5	11.5
SSW			.1	.5	.2	.0				.9	14.2
SW		.1	.5	.8	.2					1.6	12.4
WSW	.0	.1	1.0	1.5	.6	.0				3.3	12.9
W		.1	.7	1.9	.9	.3	.0			4.0	14.7
WNW	.1	.1	.4	1.0	.5	.0	.1			2.2	14.5
NW		.1	.3	.4	.1					.8	11.5
NNW		.0	.2	.2						.4	10.6
CALM	.2									.2	
TOT	.4	1.3	5.3	8.7	3.1	.5	.2			19.4	12.7

IFR: CEILING < 1000 FT AND/OR VISIBILITY < 3 MI BUT ≥ 200 FT AND ≥ 1/2 MI.

TABLE 12. WEATHER CONDITION BY HOUR (MEAN NO. OF DAYS)

	WEATHER CONDITIONS	HOUR (LST)							
		01	04	07	10	13	16	19	22
WEATHER TYPE	RAIN AND/OR DRIZZLE	2.0	2.8	2.5	2.2	2.1	2.2	2.4	2.1
	FRZ RAIN AND/OR FRZ DRIZZLE	.5	.2	.4	.2	.2	.3	.3	.3
	SNOW AND/OR ICE PELLETS	10.1	10.4	11.2	11.8	10.6	9.5	10.5	10.1
	HAIL								
	PRECIPITATION	12.4	13.1	13.7	13.9	12.8	11.9	13.0	12.4
	FOG	2.9	3.4	3.3	4.6	4.1	3.9	4.3	3.1
	FOG AND SMOKE							.1	
	SMOKE AND/OR HAZE	1.6	1.7	1.5	4.7	4.8	5.3	2.6	2.2
	OBSTRUCTIONS TO VISION	6.7	6.7	6.3	10.6	10.3	11.0	8.7	7.0
	THUNDERSTORM								
WIND SPEED (KNOTS)	CALM	.2	.1	.5		.1	.1	.3	
	1 – 6	4.4	5.5	3.4	4.0	2.6	3.6	4.9	4.6
	7 – 10	10.1	8.6	9.8	8.3	7.6	7.1	8.9	8.2
	11 – 16	9.7	10.0	11.3	12.3	14.4	14.2	11.7	12.2
	17 – 21	5.7	5.8	5.0	5.4	5.1	4.8	4.2	4.9
	22 – 27	.8	.8	.9	.8	1.1	1.1	.8	1.0
	28 – 33	.1	.2	.1	.2	.1	.1	.2	.1
	OVER 33								
VISIBILITY (MILES)	0 – 3/16			.2				.1	
	1/4 – 3/8	.1	.1	.1	.4	.2	.3		.2
	1/2 – 3/4	.3	.6	.4	1.3	1.5	1.2	.6	.6
	1 – 2 1/2	3.5	3.1	3.4	6.8	5.8	5.4	3.0	2.7
	3 – 6	5.1	5.6	5.6	6.8	5.4	5.9	6.5	5.2
	OVER 6	22.0	21.6	21.3	15.7	18.1	18.2	20.8	22.3
TEMPERATURE (°F)	ZERO OR LOWER	.7	1.0	1.2	.5	.1	.1	.4	.5
	1 – 32	21.5	21.8	22.1	22.0	20.0	19.8	21.6	21.5
	33 – 44	7.1	6.9	6.5	6.9	8.3	8.6	7.2	7.3
	45 – 64	1.7	1.3	1.2	1.6	2.6	2.5	1.8	1.7
	65 – 89								
	90 – 99								
	OVER 99								

VALUES ARE ROUNDED TO NEAREST TENTH, BUT NOT ADJUSTED TO MAKE THEIR SUMS EXACTLY EQUAL TO COLUMN OR ROW TOTALS.

THESE VALUES ARE BASED ON 3-HOURLY OBSERVATIONS.

This publication of worldwide climatic data was initially prepared by H. H. Clayton and Miss F. L. Clayton and published by the Smithsonian Institute as Volumes 79, 90, and 105 of the Smithsonian Miscellaneous Collections. Volume 79 (1927) contained data from the earliest date available up to 1920. Volume 90 (1934) included data for the decade 1921 through 1930, and Volume 105 (1947) included data for the decade 1931 through 1940.

The U.S. Weather Bureau (currently the National Weather Service) continued the publication of worldwide climatological data with a single volume for the period 1941 through 1950. Insofar as possible, this volume included the record of monthly and annual values of mean station pressure and mean sea-level pressure (millimeters of mercury or millibars); mean temperatures (Fahrenheit or Celsius); and total precipitation (millimeters or inches). It also included long homogeneous records for some stations not included in previous volumes, and for a number of stations in geographic areas not represented previously. Items of a quasi-climatological nature, such as lake and river levels and dates of freezing and thawing of rivers and lakes, are included for a few locations.

Worldwide climatic data for the decade 1951 through 1960 were gathered, prepared, and published by the U.S. Weather Bureau (National Weather Service) in cooperation with the World Meteorological Organization. The publication for 1951 through 1960 was printed in six volumes:

Volume I - North America (except Central America); published in 1965; includes data for 239 stations.
Volume II - Europe; published in 1966; 352 stations.
Volume III - South and Central America, West Indies, the Caribbean and Bermuda; published in 1966; 267 stations.
Volume IV - Asia; published in 1967; 306 stations.
Volume V - Africa; published in 1967; 380 stations.
Volume VI - Australia, New Zealand, Antarctica, Oceanic Islands, and Ocean Weather Stations; published in 1968; 344 stations.

The 1951 through 1960 publication presents data by station in sequential tables for monthly and annual average station pressure (Exhibit 119), average sea-level pressure in millibars (Exhibit 120), monthly and annual mean temperature in °C (Exhibit 121), and monthly and annual total precipitation in millimeters (Exhibit 122). Not all stations reported all of these elements and some stations had periods of missing record for some elements. For a few stations, a table of monthly and annual mean elevation of lake surface is included. Although data are generally for 1951 through 1960, data for some stations not previously published are included for the station's entire period of record.

In cooperation with the World Meteorological Organization, the National Oceanic and Atmospheric Administration, Environmental Data and Information Service, National Climatic Center is gathering, processing, and publishing the 1961 through 1970 WORLD WEATHER RECORDS. This series will also be published in

six volumes and presented in the same format (in metric units) as the 1951 through 1960 WORLD WEATHER RECORDS. Volume I - North America (except Central America) is available; Volume II - Europe will be published during late 1979. The remainder of the volumes (III through VI) will be published during 1980 and 1981 as data are received from World Meteorological Organization participating members.

EXHIBIT 119

WORLD WEATHER RECORDS

HANNOVER-LANGENHAGEN GERMANY,FED.REP.OF WMO 10338 52 28N 09 42E 54 M

NOTES ON PAGE 90

STATION PRESSURE MB

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
1961	1008.3	1013.0	1014.8	1004.2	1007.9	1009.3	1007.4	1009.6	1010.1	1007.2	1006.9	1008.3	1008.9
1962	1007.8	1012.4	1004.7	1007.1	1007.0	1014.1	1008.7	1008.7	1008.8	1014.9	1008.2	1009.3	1009.3
1963	1017.4	1007.0	1007.9	1007.5	1010.2	1007.0	1012.0	1003.4	1010.6	1012.7	999.2	1014.4	1009.1
1964	1023.1	1010.3	1010.6	1007.8	1010.8	1009.7	1011.0	1008.7	1011.7	1009.4	1011.7	1007.5	1011.0
1965	1003.1	1014.8	1010.1	1004.2	1007.9	1008.5	1005.2	1009.0	1005.5	1016.0	1002.8	995.8	1006.9
1966	1009.1	1000.3	1009.9	1005.3	1010.4	1008.3	1006.3	1008.4	1011.0	1004.5	1006.8	1000.5	1006.7
1967	1010.7	1009.6	1007.6	1008.8	1006.7	1013.2	1012.2	1009.6	1007.7	1004.8	1009.7	1006.1	1008.9
1968	1006.9	1007.7	1006.7	1010.1	1009.4	1010.1	1012.0	1007.3	1006.8	1011.0	1010.2	1006.8	1008.7
1969	1007.0	1003.3	1010.1	1008.3	1006.1	1009.1	1013.8	1008.3	1011.9	1015.4	999.4	1011.0	1008.6
1970	1005.6	1000.6	1003.3	1004.3	1008.9	1011.6	1007.0	1009.5	1011.1	1010.3	1004.3	1015.1	1007.6
MEAN	1009.9	1007.9	1008.6	1006.8	1008.5	1010.1	1009.5	1008.2	1009.5	1010.6	1005.9	1007.5	1008.6

EXHIBIT 120

SEA LEVEL PRESSURE MB

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
1961	1015.0	1019.7	1021.3	1010.6	1014.3	1015.5	1013.7	1015.9	1016.4	1013.6	1013.4	1014.9	1015.4
1962	1014.3	1019.0	1011.2	1013.6	1013.4	1020.4	1015.0	1015.0	1015.2	1021.3	1014.8	1016.0	1015.8
1963	1024.2	1013.8	1014.5	1013.9	1016.5	1013.2	1018.2	1009.7	1016.9	1019.1	1005.6	1021.1	1015.6
1964	1029.9	1017.0	1017.2	1014.2	1017.1	1015.9	1017.2	1014.9	1018.0	1015.9	1018.5	1014.3	1017.5
1965	1009.9	1021.7	1016.9	1010.9	1014.5	1015.0	1011.6	1015.5	1012.0	1022.7	1009.6	1002.5	1013.6
1966	1016.0	1007.1	1016.6	1012.0	1017.1	1014.8	1012.7	1014.9	1017.5	1011.1	1013.6	1007.2	1013.4
1967	1017.5	1016.3	1014.3	1015.5	1013.2	1019.7	1018.6	1016.0	1014.2	1011.3	1016.4	1012.9	1015.5
1968	1013.8	1014.5	1013.4	1016.7	1015.9	1016.5	1018.4	1013.7	1013.3	1017.6	1017.0	1013.7	1015.4
1969	1013.8	1010.2	1016.9	1014.9	1012.6	1015.6	1020.2	1014.7	1018.5	1022.0	1006.0	1017.9	1015.3
1970	1012.5	1007.5	1010.1	1010.9	1015.4	1018.1	1013.4	1016.0	1017.6	1016.9	1011.0	1022.0	1014.3
MEAN	1016.7	1014.7	1015.2	1013.3	1015.0	1016.5	1015.9	1014.6	1016.0	1017.2	1012.6	1014.3	1015.2
CLINO	1015.3	1015.4	1016.2	1014.6	1015.7	1016.2	1014.5	1014.5	1016.3	1015.9	1014.9	1015.1	1015.4

EXHIBIT 121

TEMPERATURE DEG C

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
1961	.2	5.6	6.4	10.6	10.4	16.4	15.3	15.9	16.7	11.0	4.3	- .3	9.4
1962	3.0	1.6	.6	8.4	10.0	14.1	14.6	15.1	12.3	9.5	3.5	- 2.6	7.5
1963	- 7.5	- 6.1	3.0	8.9	12.5	16.7	17.5	16.3	13.6	8.5	8.0	- 2.4	7.4
1964	- 1.6	.9	.8	9.0	13.9	16.9	17.9	16.3	13.9	7.4	5.2	1.7	8.5
1965	2.4	.1	3.1	7.3	11.7	15.6	15.0	15.0	13.5	8.8	.8	3.3	8.0
1966	- 1.6	2.1	4.3	8.6	13.4	17.5	16.1	15.9	13.3	11.3	3.0	3.0	8.9
1967	2.6	4.0	6.2	6.7	12.9	15.0	18.7	16.7	14.3	11.7	4.7	1.9	9.6
1968	- .3	.8	5.2	9.7	11.0	16.6	16.3	17.2	14.2	10.9	4.5	- 1.5	8.7
1969	2.4	- 1.5	- .3	7.3	13.1	15.6	18.7	17.1	13.9	11.1	5.9	- 4.2	8.3
1970	- 2.8	- .7	2.0	5.7	12.3	17.4	16.4	16.8	13.3	9.5	7.1	1.4	8.2
MEAN	- .3	.7	3.1	8.2	12.1	16.2	16.6	16.2	13.9	10.0	4.7	.0	8.5
CLINO	.1	.5	3.6	8.1	12.6	15.8	17.4	17.0	13.8	9.1	5.1	1.8	8.7

EXHIBIT 122

PRECIPITATION MM

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1961	72.4	59.3	52.7	95.9	105.2	38.6	70.0	93.4	34.7	35.4	75.3	82.0	814.9
1962	49.7	46.8	39.0	50.7	57.8	33.9	120.6	50.5	39.0	11.4	16.7	67.1	583.2
1963	11.4	12.4	33.8	29.4	34.6	44.8	45.4	94.4	34.6	34.4	80.1	11.4	466.7
1964	17.5	35.4	21.5	46.3	52.0	43.9	32.8	73.9	45.2	28.8	40.6	31.9	469.8
1965	85.9	24.9	32.7	111.2	89.2	50.1	107.7	75.7	37.5	32.4	50.9	71.3	769.5
1966	40.9	79.0	45.7	70.3	77.9	75.8	79.4	56.7	20.1	34.0	62.0	95.7	737.5
1967	48.8	31.0	59.1	45.4	101.7	72.7	53.6	97.7	104.8	41.7	69.7	70.7	796.9
1968	66.3	16.4	48.4	10.6	78.4	66.1	76.0	59.3	84.2	60.8	20.4	15.2	602.1
1969	54.5	30.8	32.5	86.1	78.1	105.9	30.8	70.1	6.5	21.5	61.0	24.2	602.0
1970	35.4	91.0	64.3	75.4	35.9	50.3	76.1	91.0	67.0	80.5	79.1	32.4	778.4
MEAN	48.3	42.7	43.0	62.1	71.1	58.2	69.2	76.3	47.4	38.1	55.6	50.2	662.1
CLINO	48	46	38	48	52	64	84	73	54	56	52	46	661

PART IV

SPECIAL PUBLICATIONS

IV

AVERAGE CIRCULATION IN THE TROPOSPHERE OVER THE TROPICS

This report presents an updated set of charts of time-averaged circulation in the middle and upper troposphere over the tropics. The analyses, on Mercator projection charts, cover the globe from 48°N to 48°S latitude, and are based upon the period January 1968 through August 1972, using rawinsonde observations and cloud motions observed by geostationary satellites.

Interhemispheric flow and variations in the vertical wind structure were examined. The zonal (u) and meridional (v) wind components, speeds, and standard deviations of these variables, as well as steadiness factor and stream function, are analyzed for the 700-, 500-, 300-, 250-, and 200-mb levels. Time-averages for the 54-month record are computed for monthly, seasonal, and the annual periods.

This report is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 (Stock No. 003-017-00375-2).

Additional upper air atlas type publications prepared during the past 20 years but no longer in print are:

a. Upper Wind Statistics Charts of the Northern Hemisphere

   Volume I, 850-, 700-, and 500-millibar levels (August 1959) NAVAER 50-1C-535.

   Volume II, 300-, 200-, and 100-millibar levels (August 1959) NAVAER 50-1C-535.

   Volume III, 50-millibar level (March 1962) NAVWEPS 50-1C-535.

b. Climate of the Upper Air, Southern Hemisphere

   (1) Volume I, Temperature, Dew Point, and Heights (September 1969) NAVAIR 50-1C-55.

   (2) Volume II, Zonal Geostrophic Winds (May 1971) NAVAIR 50-1C-56.

   (3) Volume III, Vector Mean Geostrophic Winds (May 1971) NAVAIR 50-1C-57.

   (4) Volume IV, Selected Meridional Cross Sections (June 1971) NAVAIR 50-1C-58.

c. Components of the 1,000 Millibar Winds of the Northern Hemisphere (September 1966) NAVAIR 50-1C-51.

d. Selected Level, Heights, Temperatures, and Dew Points of the Northern Hemisphere (January 1970) NAVAIR 50-1C-52.

e. Selected Meridional Cross Sections of Heights, Temperatures, and Dew Points of the Northern Hemisphere (June 1971) NAVAIR 50-1C-59.

CEILING-VISIBILITY CLIMATOLOGICAL STUDY AND SYSTEMS ENHANCEMENT FACTORS

This 138 page publication was prepared for the Federal Aviation Administration (FAA) in 1975. The climatological data tables, based upon 24-hourly observations per day, present the seasonal and diurnal variability of various ceiling-visibility conditions and System Enhancement Factors for 271 airfields in the United States and Puerto Rico (Exhibit 123). The System Enhancement Factors are estimates of the percentage of time that instrument systems will be of assistance to aircraft on an instrument approach. The normal expectation is that: (a) VOR (Very-High-Frequency Omnidirectional Range) approaches permit landings to minimum ceiling/visibility conditions of 400 feet and/or one mile; (b) Category I - ILS (Instrument Landing Systems (with approach light) permits ceiling-visibility minima of 200 feet and/or one-half mile; and (c) Category II - ILS permits ceiling-visibility minima of 100 feet and/or 1/4 mile.

Copies of this publication may be purchased from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

EXHIBIT 123

STATION#14734 NEWARK, NEW JERSEY PERIOD OF RECORD 1/48-12/66

HOUR GROUP	NO.OF OBS	CEILING-VISIBILITY CATEGORIES (%) (1)	(2)	(3)	(4)	(5)	(6)	SYSTEM ENHANCEMENT FACTORS (%) VOR	CAT1	CAT2	MIN*
JAN ALL	14136	80.1	19.9	14.7	3.1	0.9	1.1	74.1	15.6	4.6	5.7
FEB "	12888	80.1	19.9	15.1	3.3	0.6	0.9	75.9	16.5	3.2	4.4
MAR "	14136	82.8	17.2	13.9	2.5	0.4	0.3	80.9	14.8	2.5	1.9
APR "	13678	83.8	16.2	14.0	1.4	0.3	0.5	86.3	8.8	1.9	2.9
MAY "	14135	83.0	17.0	14.4	1.9	0.4	0.3	84.5	11.4	2.4	1.7
JUN "	13680	85.2	14.8	13.0	1.3	0.2	0.2	87.8	9.0	1.7	1.5
JUL "	14136	88.1	11.9	11.0	0.8	0.2	0.0	92.2	6.4	1.3	0.1
AUG "	14136	84.2	15.8	14.8	0.9	0.0	0.1	93.1	5.8	0.2	0.8
SEP "	13668	84.4	15.6	14.1	1.2	0.2	0.1	90.4	7.8	1.0	0.8
OCT "	14136	84.0	16.0	13.4	1.6	0.3	0.6	83.9	10.2	2.0	3.9
NOV "	13680	82.9	17.1	14.2	2.1	0.4	0.5	83.0	12.1	2.2	2.7
DEC "	14135	79.8	20.2	15.7	3.0	0.6	0.8	77.7	15.1	3.0	4.2
ANN 07-13	48573	78.5	21.5	17.9	2.8	0.5	0.4	82.9	12.9	2.3	1.9
14-21	55520	88.4	11.6	9.7	1.4	0.3	0.2	83.3	12.4	2.6	1.8
22-06	62451	82.3	17.7	14.9	1.7	0.4	0.7	84.1	9.7	2.1	4.1
ALL	166544	83.2	16.8	14.0	1.9	0.4	0.5	83.5	11.5	2.3	2.7

CEILING VISIBILITY CONDITIONS (% OF TOTAL OBSERVATIONS)

(1) ≥ 1500 FEET AND 3 MILES

(2) < 1500 FEET AND/OR 3 MILES

(3) < 1500 FEET AND/OR 3 MILES, BUT ≥ 400 FEET AND 1 MILE

(4) < 400 FEET AND/OR 1 MILE, BUT ≥ 200 FEET AND 1/2 MILE

(5) < 200 FEET AND/OR 1/2 MILE, BUT ≥100 FEET AND 1/4 MILE

(6) < 100 FEET AND/OR 1/4 MILE

SYSTEMS ENHANCEMENT FACTORS (CEILING VISIBILITY CONDITIONS)

VOR=FREQ (3)/FREQ(2)

CAT1 ILS=FREQ(4)/FREQ(2)

CAT2 ILS=FREQ(5)/FREQ(2)

*BELOW MINIMUMS=FREQ(6)/FREQ(2)

This publication updates similar data that appeared in CLIMATE AND MAN, the 1941 Yearbook of Agriculture. Published in 1969, it contains brief discussions of the principal features of the climate of all the continents. Worldwide temperatures and precipitation are illustrated by maps. Monthly and annual temperatures and precipitation, including extreme temperatures, are presented in tabular form for approximately 800 stations throughout the world (Exhibit 124). Data are provided for at least one location in each country throughout the world whenever possible. Cities in the larger countries such as Canada, the Soviet Union and the United States were selected to provide as complete a geographical coverage as possible.

EXHIBIT 124

TEMPERATURE AND PRECIPITATION DATA FOR REPRESENTATIVE WORLD-WIDE STATIONS

COUNTRY AND STATION	TEMPERATURE											AVERAGE PRECIPITATION													
	LENGTH OF RECORD	AVERAGE DAILY JANUARY MAXIMUM	AVERAGE DAILY JANUARY MINIMUM	AVERAGE DAILY APRIL MAXIMUM	AVERAGE DAILY APRIL MINIMUM	AVERAGE DAILY JULY MAXIMUM	AVERAGE DAILY JULY MINIMUM	AVERAGE DAILY OCTOBER MAXIMUM	AVERAGE DAILY OCTOBER MINIMUM	EXTREME MAXIMUM	EXTREME MINIMUM	LENGTH OF RECORD	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	YEAR
	YEAR	°F	°F	°F	°F	°F	°F	°F	°F	°F	°F	YEAR	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.	IN.
SOUTH AMERICA																									
Argentina:																									
Bahia Blanca	33	88	62	71	51	57	39	71	48	109	18	46	1.7	2.2	2.5	2.3	1.2	0.9	1.0	1.0	1.6	2.2	2.1	1.9	20.6
Buenos Aires	23	85	63	72	53	57	42	69	50	104	22	70	3.1	2.8	4.3	3.5	3.0	2.4	2.2	2.4	3.1	3.4	3.3	3.9	37.4
Cipolletti	9	89	56	72	40	55	29	72	43	107	9	24	0.4	0.4	0.7	0.4	0.6	0.6	0.5	0.3	0.6	0.9	0.5	0.5	6.4
Corrientes	39	93	71	81	63	71	53	82	60	112	30	40	4.7	4.5	5.3	5.6	3.3	1.9	1.7	1.5	2.8	4.7	5.2	5.2	46.4
La Quiaca	23	70	41	69	32	60	16	71	32	95	0	25	3.5	2.6	1.8	0.3	*	0.0	*	*	0.1	0.3	1.0	2.7	12.3
Mendoza	23	90	60	73	47	59	35	76	50	109	15	46	0.9	1.2	1.1	0.5	0.4	0.3	0.2	0.3	0.5	0.7	0.7	0.7	7.5
Parana	12	91	67	77	58	62	45	75	54	113	21	23	3.1	3.1	3.9	4.9	2.6	1.2	1.2	1.6	2.4	2.8	3.7	4.5	35.0
Puerto Madryn	50	81	57	70	46	55	36	68	45	104	10	50	0.4	0.6	0.7	0.5	0.9	0.6	0.6	0.4	0.6	0.7	0.4	0.6	7.0
Santa Cruz	12	70	48	57	39	41	28	58	39	94	1	20	0.6	0.3	0.3	0.6	0.4	0.5	0.4	0.5	0.3	0.3	0.4	0.7	5.3
Santiago del Estero	28	97	69	82	59	70	44	87	59	116	19	20	3.4	3.0	3.0	1.3	0.6	0.3	0.2	0.2	0.5	1.4	2.5	4.1	20.4
Ushuaia	16	57	41	48	33	39	25	52	35	85	- 6	21	2.0	2.6	1.9	2.1	1.5	1.2	1.2	1.1	1.3	1.6	1.5	1.9	19.9
Bolivia:																									
Concepcion	5	85	66	86	62	81	54	88	62	101	32	16	7.2	4.7	4.4	1.8	2.0	1.5	1.1	0.9	1.2	2.9	5.0	5.9	38.6
La Paz	31	63	43	65	40	62	33	66	40	80	26	50	4.5	4.2	2.6	1.3	0.5	0.3	0.4	0.5	1.1	1.6	1.9	3.7	22.6
Sucre	5	63	48	63	45	61	37	65	46	88	25	52	7.3	4.9	3.7	1.6	0.2	0.1	0.2	0.3	1.0	1.6	2.6	4.3	27.8
Brazil:																									
Barra do Corda	9	89	71	89	71	92	64	94	72	103	45	9	6.7	8.7	8.0	6.1	2.3	1.0	0.7	0.7	1.0	2.5	3.9	5.7	47.2
Bela Vista	13	91	67	85	61	77	49	87	61	108	20	20	6.6	4.9	4.4	4.3	5.0	2.8	1.3	1.8	2.9	5.4	5.8	7.0	52.2
Belem	16	87	72	87	73	88	71	89	71	98	61	20	12.5	14.1	14.1	12.6	10.2	6.7	5.9	4.4	3.5	3.3	2.6	6.1	96.0
Brasilia	3	80	65	82	62	78	51	82	64	93	46	3	9.0	7.8	4.8	3.4	1.4	*	0.0	*	1.3	4.9	9.7	11.7	54.0
Conceicao do Araguaia	5	88	70	91	68	95	63	93	68	102	55	5	14.9	12.1	10.8	4.1	1.9	0.4	*	0.5	1.5	6.6	4.9	8.6	66.2
Corumba	8	94	73	92	73	84	64	93	70	106	33	11	7.3	5.9	5.1	4.6	2.9	1.9	0.3	1.2	2.6	4.0	5.6	7.1	48.5
Florianopolis	17	83	72	74	64	68	57	73	63	102	32	25	7.6	5.6	6.3	4.1	3.6	3.5	2.2	3.7	4.3	5.1	3.5	4.3	53.1
Goias	11	86	63	91	63	89	56	94	63	104	41	11	12.5	9.9	10.2	4.6	0.4	0.3	0.0	0.3	2.3	5.3	9.4	9.5	64.8
Guarapuava	10	79	61	73	55	66	47	74	53	94	23	5	8.7	5.8	5.4	4.5	4.6	6.5	2.7	3.6	4.6	6.9	6.6	6.1	65.8
Manaus	11	88	75	87	75	89	75	92	76	101	63	25	9.8	9.1	10.3	8.7	6.7	3.3	2.3	1.5	1.8	4.2	5.6	8.0	71.3
Natal	18	87	76	86	73	82	69	85	75	100	61	18	1.9	4.8	7.0	9.2	7.1	8.7	7.7	3.8	1.4	0.8	0.7	1.1	54.2
Parana	19	90	58	90	58	91	48	94	58	105	37	19	11.3	9.3	9.4	4.0	0.5	*	0.1	0.2	1.1	5.0	9.1	12.2	62.3
Porto Alegre	22	87	67	78	60	66	49	74	57	105	25	22	3.5	3.2	3.9	4.1	4.5	5.1	4.5	5.0	5.2	3.4	3.1	3.5	49.1
Quixeramobim	9	92	79	86	76	88	74	93	77	100	63	13	0.7	5.0	6.6	5.0	7.0	1.7	0.7	0.6	0.4	0.6	0.7	0.6	29.6
Recife	27	86	77	85	75	80	71	84	75	94	50	56	2.1	3.3	6.3	8.7	10.5	10.9	10.0	6.0	2.5	1.0	1.0	1.1	63.4
Rio de Janeiro	38	84	73	80	69	75	63	77	66	102	46	84	4.9	4.8	5.1	4.2	3.1	2.1	1.6	1.7	2.6	3.1	4.1	5.4	42.6
Salvador (Bahia)	25	86	74	84	74	79	69	83	71	100	50	20	2.6	5.3	6.1	11.2	10.8	9.4	7.2	4.8	3.3	4.0	4.5	5.6	74.8
Santarem	22	86	73	85	73	87	71	91	73	99	65	22	6.8	10.9	13.2	12.9	11.3	6.9	4.1	1.7	1.5	1.9	2.3	4.1	77.9
Sao Paulo	44	77	63	73	59	66	53	68	57	100	32	24	8.8	7.8	6.0	2.2	3.0	2.4	1.5	2.1	3.5	4.6	6.0	9.4	57.3
Sena Madureira	12	92	69	91	68	91	63	93	69	100	41	17	11.2	11.3	10.2	9.4	4.1	2.2	1.1	1.5	4.0	7.0	7.5	11.7	81.2
Uaupes	15	88	72	88	72	85	70	89	71	100	52	10	10.3	7.7	10.0	10.6	12.0	9.2	8.8	7.2	5.1	6.9	7.2	10.4	105.4
Uruguaiana	15	91	69	78	59	66	48	77	55	108	27	12	3.6	3.6	5.6	5.1	3.7	4.2	3.2	2.8	3.6	4.1	2.9	4.1	46.6
Chile:																									
Ancud	30	62	51	57	47	50	42	55	45	82	30	46	3.1	3.7	5.3	7.4	9.9	11.0	10.3	9.4	6.5	4.2	4.7	4.6	80.1
Antofagasta	22	76	63	70	58	63	51	66	55	86	37	32	0.0	0.0	0.0	*	*	0.1	0.2	0.1	*	0.1	*	0.0	0.5
Arica	15	78	64	74	60	66	54	69	58	93	39	25	*	0.0	0.0	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	*	*
Cabo Raper	8	58	46	54	44	47	38	51	40	72	28	10	7.8	5.8	7.1	7.7	7.5	7.9	9.5	7.5	5.6	7.0	6.7	7.0	87.1

This Atlas was published in June 1968. It depicts the climate of the United States in terms of the distribution and variation of constituent climatic elements.

The climatic maps of the United States present in uniform format a series of analyses showing the national distribution of monthly and annual mean, normal and/or extreme values of temperature, precipitation, wind, barometric pressure, relative humidity, dewpoint, sunshine, sky cover, heating-degree days, solar radiation, and evaporation.

The individual analyses were originally prepared as separate sheets. The entire set - a total of 40 large sheets (16" x 21 1/2") containing 271 climatic maps and 15 tables - has been collected and bound into this comprehensive atlas. Individual sheets are still available as separates.

The following analyses or sheets are contained in the atlas:

Normal Daily Maximum, Minimum, Average, Range and Extremes of Temperature (°F), Monthly
Mean Number of Days Maximum Temperature 90°F and Above, Monthly and Annual
Mean Number of Days Minimum Temperature 32°F and Below, Monthly and Annual
Mean Date of Last 32°F Temperature in Spring
Mean Date of First 32°F Temperature in Autumn
Mean Length of Freeze-Free Period (Days)
Mean Length of Period Between Specified Temperature Limits and Freeze Free Period, Annual
Normal Total Heating Degree Days, Monthly and Annual
Normal Total Precipitation (Inches), Monthly and Annual
Mean Total Precipitation (Inches), by State Climatic Division, Monthly and Annual
State Climatic Divisions
Mean Annual Precipitation in Millions of Gallons of Water Per Square Mile by State Climatic Divisions
Mean Annual Precipitation in Millions of Gallons of Water Per Capita by State Climatic Divisions
Mean Total Snowfall (Inches)
Mean Monthly Total Snowfall (Inches), for Selected Stations
Mean Number of Days with 0.01 Inch or More of Precipitation, Monthly and Annual
Mean Dewpoint Temperature (°F), Monthly and Annual
Maximum Persisting 12-Hour 1000-mb Dewpoint Temperature (°F), Monthly and of Record
Mean Relative Humidity (%), Monthly and Annual
Mean Pan and Lake Evaporation
Mean Percentage of Possible Sunshine, Monthly and Annual
Mean Total Hours of Sunshine, Monthly and Annual
* Mean Daily Solar Radiation, Monthly and Annual
Mean Sky Cover, Sunrise to Sunset, Monthly and Annual
Prevailing Direction, Mean Speed (M.P.H.), and Fastest Mile of Wind, Monthly and Annual

Surface Wind Roses, Monthly and Annual; Resultant Surface Winds, Midseasonal
Normal Sea-Level Pressures, Monthly and Annual

* Data upon which these charts are based are questionable; charts should be used with caution.

This manual was prepared by the Department of Defense primarily to provide military engineers with uniform engineering weather data for worldwide locations. The majority of sites listed are located at military installations. The statistical data are presented in six (6) chapters as follows:

Chapter I - Winter Design Data for Heating, and Summer Design and Criteria Data for Air Conditioning for Sites in the United States; and Chapter II - For Sites Outside the United States (Exhibit 125)

a. Winter Design Data-Heating. Data presented are the dry-bulb temperatures that are equalled or exceeded 99% and 97.5% of the time, on the average, during the months of December, January, and February. Also included are data on the prevailing (Pvlg) wind direction, and the average wind speed that occurs coincidentally with the 97.5% dry-bulb winter design temperature.

b. Degree Days-Heating. Data presented are the mean annual number of degree days, using a base of 65°F, for the period 1965 through 1974, or where available, the 30-year "normal" period, 1941 through 1970 inclusive.

c. Summer Design Data-Air Conditioning. Data presented are the dry-bulb and wet-bulb temperatures (°F) that are equalled or exceeded 1%, 2.5%, and 5% of the time, on the average, during the months of June, July, August, and September. The Mean Coincident Wet-Bulb temperatures (MCWB) listed with the 1%, 2.5%, and 5% dry-bulb summer design temperatures are the averages of those wet-bulb temperatures which occur coincidentally with the respective dry-bulb summer design temperatures. The mean daily range (difference between daily maximum and daily minimum temperature) is the average of all daily dry-bulb temperature ranges for days on which the 2.5% dry-bulb summer design temperature is reached or exceeded. The prevailing (Pvlg) wind direction is the wind direction occurring most frequently with the 2.5% dry-bulb summer design temperature.

d. Summer Criteria Data-Air Conditioning. Data presented are the number of hours, on the average, that the dry-bulb temperatures of 93°F and 80°F and the wet-bulb temperature of 73°F and 67°F are equalled or exceeded during the months of May through October.

Chapter III - Data for Use in Calculating Energy Consumption Estimates for Sites in the United States; and Chapter IV - For Sites Outside the United States (Exhibit 126). The data, based upon 24-hourly observations per day for at least a five year period, are the monthly mean frequencies of dry-bulb temperatures, by 5-degree intervals, for three hour groups and for all hours. The Mean Coincident Wet-Bulb (MCWB) temperature shown is the mean of all the wet-bulb temperatures that were observed coincidentally with the dry-bulb temperatures in that particular 5-degree interval.

Chapter V - Cooling Degree Day Data for Sites in the United States; and Chapter VI - For Sites Outside the United States. The data presented are the mean annual cooling-degree day totals, using a base of 65°F, for the period 1965 through 1974, inclusive, or where available, the 30-year "normal" period 1941-70, inclusive.

This manual is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. The stock number is GPO 008-070-0042-8.

EXHIBIT 125

STATE / Station	LOCATION Lat	LOCATION Long	Elev	WINTER DESIGN DATA HEATING Dry Bulb 99%	97.5%	Prvg Wind dir	Mean Speed knots	DEGREE DAYS Heating annual	SUMMER DESIGN DATA AIR CONDITIONING Dry Bulb 1%	MCWB	2.5%	MCWB	Mean Daily Range	Prvg Wind dir	5%	MCWB	Wet Bulb 1%	2.5%	5%	SUMMER CRITERIA DATA AIR CONDITIONING Dry Bulb ≥ 93°F	≥ 80°F	Wet Bulb ≥ 73°F	≥ 67°F
	° '	° '	feet	°F	°F		knots	annual	°F	°F	°F	°F	°F		°F	°F	°F	°F	°F	hrs	hrs	hrs	hrs
ALABAMA	N	W																					
Alabama Ordnance Works	33 20	86 21	430	19	23	SW	5	2806	97	77	94	76	25	SW	92	76	79	78	78	140	1251	1145	2620
Anniston Army Depot	33 37	85 58	765	18	22	SW	5	2806	97	77	94	76	25	SW	92	76	79	78	78	140	1251	1145	2620
Birmingham MAP	33 34	86 45	620	17	21	NNW	8	2844	96	74	94	75	23	WNW	92	74	78	77	76	116	1380	1033	2696
Brookley AFB/Mobile	30 38	88 04	26	26	29	N	8	1750	94	77	92	78	18	S	90	77	81	80	79	61	1697	2249	3505
Craig AFB/Selma	32 20	86 59	166	22	26	NNW	7	2155	97	78	95	77	21	WNW	93	77	81	80	79	196	1657	1821	3229

EXHIBIT 126

LANGLEY AFB/HAMPTON VIRGINIA

LAT 37 05N LONG 76 21W ELEV 10 FT

MEAN FREQUENCY OF OCCURRENCE OF DRY BULB TEMPERATURE (DEGREES F) WITH MEAN COINCIDENT WET BULB TEMPERATURE (DEGREES F) FOR EACH DRY BULB TEMPERATURE RANGE

Temperature Range	MAY Obsn Hour Gp 01 to 08	09 to 16	17 to 24	Total Obsn	MCWB	JUNE Obsn Hour Gp 01 to 08	09 to 16	17 to 24	Total Obsn	MCWB	JULY Obsn Hour Gp 01 to 08	09 to 16	17 to 24	Total Obsn	MCWB
95/99		0		0	76		2	D	2	78		3	0	3	78
90/94		2	0	2	74		15	3	18	77		23	4	27	77
85/89		13	3	16	71	1	39	15	55	75	0	56	19	75	76
80/84	0	32	1D	42	69	5	55	33	93	73	12	81	52	145	74
75/79	3	40	25	68	67	33	58	52	143	70	92	62	93	247	72
70/74	30	49	44	123	65	87	45	70	202	68	101	21	66	188	69
65/69	57	46	50	153	61	64	19	45	128	63	33	2	13	48	65
60/64	57	41	53	151	57	32	7	18	57	59	8	0	2	10	60
55/59	51	18	39	108	53	13	1	3	17	55	2		0	2	56
50/54	33	6	19	58	49	3		1	4	50					
45/49	11	1	4	16	45	1		0	1	46					
40/44	5		1	6	40	0			0	43					
35/39	1		0	1	36										
30/34															
25/29															

Temperature Range	AUGUST Obsn Hour Gp 01 to 08	09 to 16	17 to 24	Total Obsn	MCWB	SEPTEMBER Obsn Hour Gp 01 to 08	09 to 16	17 to 24	Total Obsn	MCWB	OCTOBER Obsn Hour Gp 01 to 08	09 to 16	17 to 24	Total Obsn	MCWB
95/99		2	0	2	79										
90/94		17	3	20	78		3	0	3	77					
85/89	0	49	14	63	76		24	3	27	75		2		2	73
80/84	11	83	44	138	74	1	49	17	67	73		7	1	8	71
75/79	82	65	94	241	72	28	65	51	144	71	2	20	6	28	69
70/74	97	28	69	194	69	71	52	66	189	68	12	52	21	85	66
65/69	41	4	19	64	64	58	30	54	142	63	35	62	53	150	62
60/64	12	0	4	16	60	45	15	33	93	58	59	50	58	167	58
55/59	4		1	5	55	26	2	12	40	54	44	34	46	124	52
50/54	1		0	1	51	9		4	13	50	40	14	35	89	48
45/49						2		1	3	46	31	5	17	53	44
40/44						0			0	43	16	1	8	25	39
35/39											9	0	2	11	35
30/34											1		0	1	30
25/29											0			0	26

HISTORICAL CLIMATOLOGY SERIES

The publications in this series provide climatological data for selected stations with long records that are located in distinctly nonurban environments.

Each publication contains a narrative summary on the history of the station and pertinent topographic maps of the surrounding area. Tabular data presented are as serially complete as possible and include sequential tables of monthly and annual mean temperature, mean maximum temperature, mean minimum temperature, highest temperature, lowest temperature, total precipitation, and total snowfall; seasonal values of mean temperature, total precipitation, and total snowfall with supplemental graphs; and dates of last freeze (temperature 32 degrees Fahrenheit or less) in spring and first freeze in fall. Some publications may include summaries of quasi-climatological data that are unique to the particular area, e.g., dates of lake surface freezing and ice disappearance.

Publications available in this series as of August 1979 are:

1. A Long Record of Weather Observations at Cooperstown, New York, 1854-1977.

2. Ninety-one Years of Weather Records at Yellowstone National Park, Wyoming, 1887-1977.

This special report was prepared in 1978 by the National Oceanic and Atmospheric Administration, Environmental Data and Information Service, National Climatic Center for the U.S. Department of Energy, Division of Solar Technology. The tables (Exhibit 127) presented in this report are by-products of efforts to provide taped meteorological and solar radiation data as inputs to requester's energy design and performance programs. Tabular values are climatological means for 248 U.S. stations.

The monthly and annual normals of maximum, minimum, and average temperatures, and of heating- and cooling-degree days, were extracted from CLIMATOGRAPHY OF THE UNITED STATES NO. 81 (BY STATE) and the 1977 issues of LOCAL CLIMATOLOGICAL DATA, ANNUAL SUMMARY WITH COMPARATIVE DATA. Zeros that appear for all values in a normals column indicate that the 1941 through 1970 period normals were not available for the station. A total of 43 stations have at least two normals columns filled with zeros and 16 have no normals data at all.

Average daily values of total hemispheric (global) solar radiation on a horizontal surface were based on corrected (rehabilitated) hourly measurements for 26 stations and derived values from the corrected measurements for the remaining 222 stations. The 26 rehabilitated data stations are identified. Most of the average values are based on a 24-25 year period. SOLMET MANUALS VOLUME 1 USER'S MANUAL and VOLUME 2 - FINAL REPORT list the exact period as well as providing information on the rehabilitation of hourly solar radiation data. Average daily values for 14 stations were computed from a composite period of record where the station occupied two different nearby locations. For all cases, tables list the station name, number, and coordinates of the last location.

EXHIBIT 127

STATION: CHARLOTTE STATE: NC

STATION NUMBER: 13881 LATITUDE: 3513N LONGITUDE: 8056W ELEVATION: 234

	NORMAL TEMPERATURE (DEG F)*			NORMAL DEGREE DAYS*		TOTAL HEMISPHERIC MEAN DAILY SOLAR RADIATION#		
				BASE 65 DEG F				
MONTH	DAILY MAXIMUM	DAILY MINIMUM	MONTHLY	HEATING	COOLING	BTU/FT2	KJ/M2	LANGLEYS
JAN	52.1	32.1	42.1	710	0	719.0	8160.0	195.0
FEB	54.9	33.1	44.0	588	0	971.0	11020.0	263.4
MAR	62.2	39.0	50.6	461	15	1317.5	14952.0	357.4
APR	72.7	48.9	60.8	145	19	1695.0	19236.0	459.8
MAY	80.2	57.4	68.8	34	152	1855.6	21059.0	503.3
JUN	86.4	65.3	75.9	0	327	1921.1	21802.0	521.1
JUL	88.3	68.7	78.5	0	419	1830.9	20779.0	496.6
AUG	87.4	67.9	77.7	0	394	1695.0	19236.0	459.8
SEP	82.0	61.9	72.0	10	220	1415.6	16065.0	384.0
OCT	73.1	50.3	61.7	152	50	1173.4	13317.0	318.3
NOV	62.4	39.6	51.0	420	0	865.5	9823.0	234.8
DEC	52.5	32.4	42.5	698	0	672.4	7631.0	182.4
ANN	71.2	49.7	60.5	3218	1596	1344.4	15257.0	364.7

* BASED ON 1941-1970 PERIOD # AS NOTED IN SOLMET VOLUME 1

NOAA ATLAS 2, PRECIPITATION-FREQUENCY ATLAS OF THE WESTERN UNITED STATES

This atlas, published in looseleaf form in 1973, contains eleven volumes, one volume for each of the western states. All maps are prepared on the same 1:2,000,000 scale. It is based upon all of the previous work on precipitation-frequency studies and presents the precipitation-frequency regime in more detail and with greater accuracy. This atlas supersedes the information for the western states contained in Weather Bureau Technical Paper No. 40 that was published in 1961.

Each volume is organized in three parts as follows:

1. The first part discusses the historical background, procedures, and methods used in preparing the maps and how to interpret them.

2. The second part discusses ideas that are applicable only to the particular state considered in the volume. Included in this part are methods (nomograms and equations) useful for estimating precipitation-frequency values for durations other than 6 or 24 hours, e.g., 5-, 10-, 15-, and 30-minutes or 1-, 2-, 3-, and 12- hours.

3. The third part contains maps for the 6- and 24-hour durations for return periods of 2-, 5-, 10-, 25-, 50-, and 100-years.

Copies of this atlas are available from the Superintendent of Documents, Government Printing Office, Washington, DC 20402. The volume number and GPO Stock Number for each state are shown below:

Volume No.	State	GPO Stock No.	Volume No.	State	GPO Stock No.
I	Montana	0317-00155	VII	Nevada	0317-00161
II	Wyoming	0317-00156	VIII	Arizona	0317-00162
III	Colorado	0317-00157	IX	Washington	0317-00163
IV	New Mexico	0317-00158	X	Oregon	0317-00164
V	Idaho	0317-00159	XI	California	0317-00165
VI	Utah	0317-00160			

NOAA TECHNICAL MEMORANDUM NWS HYDRO-35; 5- to 60-MINUTE PRECIPITATION FREQUENCY FOR THE EASTERN AND CENTRAL UNITED STATES

This report, published in June 1977, was in 1979 the latest in the precipitation-frequency literature for the United States that began in the 1930's when David L. Yarnell (1935) first published generalized precipitation-frequency maps for durations of 5 minutes to 24 hours at return periods of 2- to 100-years.

Since 1961, the U.S. Weather Bureau Technical Paper Number 40 (Hershfield 1961) has been the standard for precipitation-frequency values for durations from 5 minutes to 24 hours. For durations of less than 1 hour, the Technical Paper Number 40 values are derived by using nationwide, return-period independent ratios of shorter duration values to 1-hour values. While these average ratios are valid in many specific sections of the country, they do have observed, describable geographic patterns; they also vary with return-period.

The present publication analyzes the above variations and derives new 5- to 60-minute precipitation frequency for the 37 states, North Dakota to Texas and eastward. Precipitation-frequency values for durations of 5-, 15-, and 60-minutes at return periods of 2- and 100-years are presented in map form for the 37 states from North Dakota to Texas and eastward. Equations are given to derive 10- and 30-minute values from the maps. Equations are also given to compute values for selected return periods between 2- and 100-years.

This report supersedes U.S. Weather Bureau Technical Paper Number 40 for the Central and Eastern United States for the computation of precipitation-frequency for time period values of one hour or less.

This report is available from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161; the NTIS order number is PB 272 112/AS.

SELECTED CLIMATIC MAPS OF THE UNITED STATES

This special publication is a collection of 8" x 10 1/2" charts which are reprints of selected 16" x 21 1/2" sheets from the CLIMATIC ATLAS OF THE UNITED STATES. The maps included in this publication present isopleths of the following:

Normal Daily Maximum Temperature (°F), January
Normal Daily Minimum Temperature (°F), January
Normal Daily Maximum Temperature (°F), July
Normal Daily Minimum Temperature (°F), July
Mean Annual Number of Days Maximum Temperature 90°F and Above, Except 70°F and Above in Alaska
Mean Annual Number of Days Minimum Temperature 32°F and Below
Mean Annual Total Heating Degree Days (Base 65°F)
Mean Annual Total Cooling Degree Days (Base 65°F)
Mean Date of Last 32°F Temperature in Spring
Mean Date of First 32°F Temperature in Autumn
Mean Length of Freeze-Free Period (Days)
Normal Annual Total Precipitation (Inches)
Normal Monthly Total Precipitation (Inches) Western United States--For Selected Stations
Normal Monthly Total Precipitation (Inches) Eastern United States--For Selected Stations
Mean Annual Number of Days with 0.01 Inch or More of Precipitation
Mean Annual Number of Days with Thunderstorms
Mean Annual Total Snowfall (Inches)
Mean Relative Humidity (%), January
Mean Relative Humidity (%), July
Mean Annual Relative Humidity (%)
Mean Monthly Percentage of Possible Sunshine, January
Mean Monthly Percentage of Possible Sunshine, July
Mean Annual Percentage of Possible Sunshine
Mean Annual Total Hours of Sunshine
* Mean Daily Solar Radiation (Langleys), January
* Mean Daily Solar Radiation (Langleys), July
Surface Wind Roses, January
Surface Wind Roses, July
Surface Wind Roses, Annual

* Data upon which these charts are based are questionable; charts should be used with caution.

STATE, REGIONAL, AND NATIONAL MONTHLY AND ANNUAL TEMPERATURES WEIGHTED BY AREA (JANUARY 1931 - DECEMBER 1977)

STATE, REGIONAL, AND NATIONAL MONTHLY AND ANNUAL TOTAL PRECIPITATION WEIGHTED BY AREA (JANUARY 1931 - DECEMBER 1977)

STATE, REGIONAL, AND NATIONAL MONTHLY AND SEASONAL HEATING DEGREE DAYS WEIGHTED BY POPULATION (JULY 1931 - JUNE 1978)

STATE, REGIONAL, AND NATIONAL MONTHLY AND SEASONAL COOLING DEGREE DAYS WEIGHTED BY POPULATION (JANUARY 1931 - DECEMBER 1977)

These four publications, all issued in the same general format, are based upon data from the 48 conterminous States; the District of Columbia is treated as a part of Maryland. They present serially complete sequential tables of the monthly and annual values.

The State temperature and precipitation data were derived from the monthly climatological division averages for that State, weighted by the proportion of the area of that division to the total area of the State. The boundaries of the divisions are drawn to represent, as nearly as possible, homogeneous climatic regimes. The number of divisions in a State varies from as few as one in Rhode Island to as many as 10 in seven States. Regional data are presented for each of the nine regions defined by the Bureau of the Census; the values are derived from the State data, weighted by the proportion of the area of the State to the total area of the region. The National data were derived from the regional averages, weighted by the proportion of the area of the region to the total area of the 48 conterminous States.

The heating-degree day and cooling-degee day data are calculated using a base temperature of 65°F. The state regional and national values are derived using the same geographic areas as those used for the temperature and precipitation values. The weighting, however, is done by population, based upon the 1970 Census, in the areas rather than by the sizes of the geographic areas. The seasonal totals for heating-degree days are the totals for the months July through June; seasonal totals for cooling-degree days are the totals for the months January through December.

Updated versions of each publication are published periodically - approximately every two years. However, the basic data for heating- and cooling-degree days are compiled for each State on a monthly basis. These monthly compilations include values for the current season to date, data for the previous season, and the accumulated seasonal totals with their departures from normal. The monthly data are not published but copies of these compilations may be secured from the National Climatic Center, Federal Building, Asheville, NC 28801 for the cost of reproduction.

U. S. AIR FORCE CLIMATIC BRIEF

This one page climatological summary, prepared by the U.S. Air Force Air Weather Service, is available for more than 400 Air Force Bases throughout the world. The tables of means and extremes and flying-weather statistics are in the same format as those in the U.S. Navy Station Climatic Summary (Exhibits 128 and 129). The monthly and annual flying-weather percent frequencies are presented by 3-hour groups (00-02, 03-05, ..., 21-23 LST) and for all hours for four categories that differ somewhat from those in the Navy publication. The flying-weather categories are: (1) ceiling less than 3,000 ft. and/or visibility less than 3 miles; (2) ceiling less than 1,500 ft. and/or visibility less than 3 miles; (3) ceiling less than 1,000 ft. and/or visibility less than 2 miles; and (4) ceiling less than 200 ft. and/or visibility less than 1/2 mile. The CLIMATIC BRIEF does not contain a narrative description of the climate of the area, sequential tables of monthly and annual values of temperature, precipitation, and degree days, or a station location and instrument location history table.

This publication is printed in limited quantity. A list of stations for which it has been prepared and copies of the summaries can be furnished by the National Climatic Center, Federal Building, Asheville, NC 28801 for the cost of reproduction.

U.S. NAVY STATION CLIMATIC SUMMARY

This 4-page climatological summary is published by the U.S. Naval Oceanography Command for U.S. Navy and Marine Corps Air Stations throughout the world. They are revised, updated, and reprinted periodically. The latest issue was printed in 1979 and summarizes the observed meteorological data available at each station through 1977 for 61 stations. Each publication presents a means and extremes table for selected meteorological elements (Exhibit 128); a table of percentage frequencies for selected flying-weather conditions (Exhibit 129); and sequential tables of monthly and annual values of mean temperature, total precipitation, total heating-degree days, and total cooling-degree days (Exhibit 130). Also included in each publication are a narrative description of the climate of the area around the station and a table showing the station location and instrument history.

The stations for which the 1979 series was prepared are listed below. Copies of these publications may be secured from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

Adak, Alaska
Agana, Guam
Alameda, California
Andrews Air Force Base, Maryland
Barbers Point, Hawaii
Beaufort, South Carolina
Bermuda
Brunswick, Maine
Camp Pendleton, California
Cecil Field, Florida
Charleston, South Carolina
Chase Field, Texas
Cherry Point, North Carolina
China Lake, California
Corpus Christi, Texas
Cubi Point, Philippines
Dallas, Texas
Diego Garcia
El Toro, California
Fallon, Nevada
Futenma, Okinawa
Glenview, Illinois
Guantanamo Bay, Cuba
Imperial Beach, California
Iwakuni, Japan
Jacksonville, Florida
Kadena, Okinawa
Kaneohe Bay, Hawaii
Keflavik, Iceland
Key West, Florida
Kingsville, Texas
Lakehurst, New Jersey
Lemoore, California
Mayport, Florida
McMurdo, Antarctica
Memphis, Tennessee
Meridian, Mississippi
Midway Island
Miramar, California
Moffett Field, California
New Orleans, Louisiana
New River, North Carolina
Norfolk, Virginia
Oceana, Virginia
Patuxent River, Maryland
Pensacola, Florida
Point Mugu, California
Quantico, Virginia
Roosevelt Roads, Puerto Rico
Rota, Spain
San Clemente Island, California
San Diego, California
San Nicolas Island, California
Santa Ana, California
Souda Bay, Crete
South Weymouth, Massachusetts
Whidbey Island, Washington
Whiting Field, Florida
Willow Grove, Pennsylvania
Yokosuka, Japan
Yuma, Arizona

EXHIBIT 128

PREPARED BY: NWSED ASHEVILLE STATION NAME: CHINA LAKE, CALIF PERIOD: APR 45-DEC 72 STN LTRS: KNID
APRIL 1973 LOCATION : N35 41 W117 41 ELEV : 2283 WBAN # : 93104
WMO # : 72384

MEAN NUMBER OF DAYS OCCURRENCE OF:

	TEMPERATURE DEG F MEAN DAILY MAX	MEAN DAILY MIN	MEAN MON	EXTREMES MAX	EXTREMES MIN	PRECIPITATION MONTH MEAN	MAX	MIN	INCHES MAX 24 HRS	SNOWFALL MN	SNOWFALL MAX	SNOWFALL MAX 24 HR	RELATIVE HUM LST 04	RELATIVE HUM LST 13	VAPOR PRESS IN OF HG	DEW PT DEG F	PRESS ALT FEET 99.95%	SFC PVLG DRCTN	WINDS SPEED MN	WINDS SPEED MAX	MEAN AMT CLD IN TENTH	PRECIP INCHES .01 OR GTR	PRECIP INCHES .5 OR GTR	SNOWFALL .1 OR GTR	SNOWFALL 1.5 OR GTR	THUNDERSTORMS	VISIBILITY < 7MI	FOG	MAX DEG F > 90	MAX DEG F > 75	MIN DEG F < 32	MIN DEG F < 15
JAN	57	30	44	77	6	.5	2.1	#	.9	#	5	5	63	37	.14	25	2700	SW	5	67	4	2	0	#	#	0	1	0	#	19	1
FEB	63	36	50	81	14	.4	1.6	#	.9	#	#	#	59	32	.15	27	2750	SW	7	69	4	3	0	0	0	0	#	0	2	9	#
MAR	68	41	55	86	22	.2	1.8	#	.9	#	#	#	52	25	.15	27	2700	SW	9	70	3	1	0	0	0	#	#	0	8	4	0
APR	78	49	64	97	28	.1	.9	#	.9	0	0	0	46	20	.17	30	2800	SW	9	64	3	1	0	0	0	#	0	3	20	#	0
MAY	85	56	71	107	38	.1	2.1	#	1.0	0	0	0	43	18	.20	34	2750	SW	9	71	3	1	0	0	0	#	0	11	26	0	0
JUN	95	65	80	114	42	#	.3	#	.3	0	0	0	36	15	.22	37	2650	SW	9	67	1	#	0	0	0	#	1	23	29	0	0
JUL	102	72	87	113	55	#	.2	#	.2	0	0	0	32	15	.27	42	2700	SW	8	52	2	#	0	0	0	#	0	31	[illegible]	0	0
AUG	100	69	85	110	53	.1	.7	#	.6	0	0	0	35	16	.27	42	2700	SW	8	50	2	1	0	0	0	1	0	30	31	0	0
SEP	94	62	78	110	40	.3	2.1	#	.9	0	0	0	38	17	.23	38	2650	SW	7	60	1	1	0	0	0	#	0	23	30	0	0
OCT	82	51	67	100	32	.1	.8	#	.8	0	0	0	45	20	.19	33	2650	SW	6	59	2	1	0	0	0	#	0	6	25	#	0
NOV	68	38	53	86	20	.3	2.0	#	1.0	0	0	0	55	29	.15	28	2700	SW	5	62	3	1	0	0	0	#	#	0	7	7	0
DEC	59	31	45	75	8	.4	1.1	#	.9	#	#	#	65	37	.14	26	2650	SW	5	62	3	2	0	#	0	0	1	0	#	19	#
ANN	79	50	65	114	6	2.5	2.1	#	1.0	#	5	5	47	23	.18	32	2800	SW	7	71	3	14	0	#	0	1	3	27	178	58	1
EYR	20	20	20	20	20	20	20	20	20	19	19	19	27	27	27	27	28	28	28	19	23	20	20	19	19	20	20	20	20	20	20

REMARKS: *DATA NOT AVAILABLE. #LESS THAN 0.5 DAY, 0.5 OR 0.05 INCH, OR 0.5 PERCENT AS APPLICABLE.
THE VALUE LISTED UNDER "PRESS ALT FEET 99.95%" INDICATES IT IS EXCEEDED ONLY 0.05% OF THE TIME.
EYR MEANS EQUIVALENT YEARS OF RECORD (I.E. THE ACTUAL NUMBER OF YEARS UTILIZED IN THE COMPUTATIONS FROM THE OVERALL PERIOD OF RECORD, POR).

EXHIBIT 129

FLYING WEA %	HRS LST	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	EYR
CEILING	00-02	2	1	2	0	0	0	0	0	0	0	0	2	1	19
LESS 5000	03-05	2	1	1	1	0	0	0	0	0	0	1	2	1	20
FT AND/OR	06-08	3	3	2	1	0	0	0	0	0	0	3	3	1	28
VISIBILITY	09-11	4	4	2	2	1	0	0	0	0	1	2	3	2	28
LESS 5 MI	12-14	4	5	3	2	1	0	0	0	0	1	3	3	2	28
	15-17	3	4	3	2	0	0	0	0	0	0	2	2	1	28
	18-20	3	3	3	2	0	0	0	0	0	1	2	2	1	28
	21-23	3	1	2	1	0	0	0	0	0	1	1	2	1	21
	ALL HRS	3	3	2	1	0	0	0	0	0	1	2	2	1	28
CEILING	00-02	1	0	0	0	0	0	0	0	0	0	0	0	0	19
LESS 1000	03-05	1	0	0	0	0	0	0	0	0	0	0	0	0	20
FT AND/OR	06-08	1	0	1	1	0	0	0	0	0	0	1	1	0	28
VISIBILITY	09-11	1	1	1	1	0	0	0	0	0	0	0	0	0	28
LESS 3 MI	12-14	1	1	1	0	0	0	0	0	0	0	0	1	0	28
	15-17	1	1	0	0	0	0	0	0	0	0	0	0	0	28
	18-20	1	0	0	0	0	0	0	0	0	0	0	0	0	28
	21-23	1	0	0	1	0	0	0	0	0	0	0	0	0	21
	ALL HRS	1	1	0	0	0	0	0	0	0	0	0	0	0	28
CEILING	00-02	1	0	0	0	0	0	0	0	0	0	0	0	0	19
LESS 600	03-05	1	0	0	0	0	0	0	0	0	0	0	0	0	20
FT AND/OR	06-08	1	0	0	0	0	0	0	0	0	0	1	1	0	28
VISIBILITY	09-11	1	0	1	0	0	0	0	0	0	0	0	0	0	28
LESS 2 MI	12-14	0	1	0	0	0	0	0	0	0	0	0	0	0	28
	15-17	0	1	0	0	0	0	0	0	0	0	0	0	0	28
	18-20	0	0	0	0	0	0	0	0	0	0	0	0	0	28
	21-23	0	0	0	0	0	0	0	0	0	0	0	0	0	21
	ALL HRS	1	0	0	0	0	0	0	0	0	0	0	0	0	28

MEAN TEMPERATURE °F

Year	Jan	Feb.	Mar	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1943				62.0	69.5	78.3P	87.8	82.6	78.4	66.4	51.8	43.0	M
1946	43.1	47.8	33.6	65.5	71.1	78.5	83.1	85.2	76.6	61.1	48.6	47.6	63.8
1947	43.7	32.3	58.0	63.8	74.4	78.9	83.8	81.7	80.4	66.5	49.6	43.7	64.7
1948	45.7	45.7	48.9	61.5	67.7	79.0	84.7	82.8	77.7	63.7P	30.8	41.0	M
1949	34.9	43.5	52.7	67.1	70.3	82.1	87.2	82.5	78.5	63.3P	58.8	43.3	M
1950	41.1P	32.6	55.8	66.4	71.9	78.5	87.8	84.8	75.8	69.6	59.0	51.0P	M
1931	44.9	48.8	56.5	63.7	72.6	80.3	88.6P	84.6	80.9	65.2	51.3	43.5	M
1932	41.0	49.6	49.9	62.9	74.6	76.3	87.2	87.2	78.6	70.7	50.5	44.6	64.4
1953	48.7	48.4	34.9	62.5	63.3	76.4	90.3	84.0	79.5	64.9	54.8	43.4	64.3
1934	43.6P	34.3P	52.2	67.9	76.1P	78.8	88.9	82.2	77.6	66.7	53.6	42.6	M
1955	40.4	43.3	54.3	38.6	68.3	79.1	84.8	88.1	79.3	68.2	52.5	47.8	63.8
1936	48.2	45.8	56.0	60.8	71.7	81.3	83.0	82.6	81.2	63.8	51.0	45.2	64.4
1937	41.4	35.4	38.1	62.9	68.3	84.1	86.6	84.7	77.7	62.3	49.9	45.0	64.7
1938	46.9	33.1	51.8	61.8	74.9	79.6	85.8	88.8	79.3	70.1	33.3	46.8	66.1
1959	47.4	47.6	59.9	68.8	70.3	84.2	92.0	84.6	76.1	68.8	54.5	47.5	66.8
1960	42.3	48.7	60.2	64.8	70.7	84.1	88.2	85.1	80.3	66.3	52.3	45.8	65.7
1961	43.3	31.0	56.0	65.3	68.7	84.7	89.3	84.5	74.8	64.2	51.3	44.6	63.0
1962	44.9	49.4P	51.4	67.3	67.1	78.3	83.9	83.3	78.8	67.9	56.3	46.9	M
1963	42.5	37.6	33.6	37.3	72.1	76.0	84.2	82.9	78.6	68.3	54.9	46.1	64.3
1964	44.6	48.3	52.9	61.2	67.8	77.3	86.4	85.5	76.4	72.0	M	M	M
1965	M	M	M	M	M	M	M	M	M	M	M	M	M
1966	M	M	M	M	M	M	M	M	M	M	M	M	M
1967	M	M	M	M	M	M	M	M	M	M	M	M	M
1968	M	M	M	M	M	M	M	M	M	M	M	M	M
1969	M	M	M	M	M	M	M	M	M	M	M	M	M
1970	M	M	M	M	M	M	M	M	M	M	M	M	M
1971	M	M	M	M	M	M	M	M	M	M	M	M	M
1972	M	M	M	M	M	M	M	M	M	M	M	M	M

TOTAL PRECIPITATION INCHES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct	Nov.	Dec.	Annual
1943				0.00	2.13	T	0.02	0.18	T	1.27P	T	1.13	M
1946	T	0.07	0.24	0.03	0.00	0.00	0.03	T	0.00	0.17	2.03	1.05	3.62
1947	T	0.04	0.08	0.44	T	0.00	0.00	T	0.00	0.42	0.00	1.05	2.03
1948	T	0.19	0.02	0.06	0.16	0.07	0.00	0.00	0.00	T	0.00	M	M
1949	M	0.14	0.14	0.03	0.03	T	T	0.03	T	T	0.04	0.41	M
1930	0.00P	0.37	0.03	T	0.00P	T	0.18	T	0.78	T	0.02P	T P	M
1931	0.08	0.01	T	0.01	0.13	0.00	T	T	0.00P	0.03	0.05	0.57	M
1952	2.13	0.15	1.77	0.05	0.00	T	0.02	T	0.12	0.00	0.33	1.10P	M
1933	T	0.00	T	0.06	T	0.00	0.04	T	T	T	0.06	0.00	0.16
1954	1.41P	0.40P	0.45	T	0.02P	0.00	0.03	T	0.41	0.00	0.76	0.57	M
1933	0.59	T	0.00	0.01	T	0.00	0.00	0.00	0.00	0.00	0.05	0.02	0.67
1936	0.71	0.00	0.00	0.94	0.01	0.00	T	0.00	0.00	0.07	0.00	0.00	1.73
1937	1.00	0.41	0.02	0.01	0.06	0.03	T	0.00	0.50	0.03	0.16	0.91	3.13
1938	0.38	1.38	0.63	0.58	T	0.00	T	0.01	0.15	0.40	T	0.00	3.75
1939	0.50	0.84	0.00	T	0.03	0.00	0.00	T	0.70	T	0.14	0.77	2.98
1960	0.47	1.08	T	0.04	0.00	0.29	0.03	0.00	0.29	T	0.89	0.03	3.14
1961	0.33	T	T	T	0.00	0.00	0.00	0.55	T	0.11	0.99	0.46	2.46
1962	0.73	0.89P	0.10	0.00	T	0.00	T	T	T	T	T	T	M
1963	0.08	0.90	0.18	T	0.00	0.02	0.00	0.71	2.14	0.81	0.41	T	5.23
1964	0.12	T	0.03	T	T	0.00	0.12	0.04	0.01	0.13	M	M	M
1965	M	M	M	M	M	M	M	M	M	M	M	M	M
1966	M	M	M	M	M	M	M	M	M	M	M	M	M
1967	M	M	M	M	M	M	M	M	M	M	M	M	M
1968	M	M	M	M	M	M	M	M	M	M	M	M	M
1969	M	M	M	M	M	M	M	M	M	M	M	M	M
1970	M	M	M	M	M	M	M	M	M	M	M	M	M
1971	M	M	M	M	M	M	M	M	M	M	M	M	M
1972	M	M	M	M	M	M	M	M	M	M	M	M	M

MONTHLY AND SEASONAL DEGREE DAYS

Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
44-43										168	18	M	M
45-46	0	0	3	54	403	683	616	481	333	96	2	0	2691
46-47	0	0	0	133	491	340	660	357	219	114	4	0	2320
47-48	0	0	2	44	462	660	598	361	500	133	62	0	3042
48-49	0	0	14	M	427	745	934	602	380	43	22	0	M
49-50	0	0	0	M	185	672	M	347	286	75	47	2	M
30-51	0	0	0	12	210	M	623	434	271	98	24	0	M
31-52	M	0	0	62	411	663	744	447	471	91	1	0	M
32-53	0	0	4	6	434	631	306	464	313	132	103	5	2398
53-34	0	0	0	83	312	671	M	M	399	38	M	8	M
34-53	0	0	0	63	281	693	762	602	337	202	66	3	3009
35-56	0	0	0	24	376	332	520	338	283	163	21	0	2479
56-37	0	0	0	102	420	613	733	268	219	98	31	0	2484
57-58	0	0	0	105	453	619	361	333	410	152	3	0	2636
58-39	0	0	0	43	343	364	347	486	167	6	20	0	2178
39-60	0	0	1	30	316	543	703	472	138	95	19	10	2349
60-61	0	0	0	52	383	396	610	393	278	77	14	1	2404
61-62	0	0	0	129	410	633	623	M	422	30	53	4	M
62-63	0	0	0	18	260	362	696	206	353	247	16	0	2358
63-64	0	0	2	24	303	386	631	478	374	154	93	7	2654

MONTHLY AND SEASONAL DEGREE DAYS

Season	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
64-63	0	0	0	20	M	M	M	M	M	M	M	M	M
63-66	M	M	M	M	M	M	M	M	M	M	M	M	M
66-67	M	M	M	M	M	M	M	M	M	M	M	M	M
67-68	M	M	M	M	M	M	M	M	M	M	M	M	M
68-69	M	M	M	M	M	M	M	M	M	M	M	M	M
69-70	M	M	M	M	M	M	M	M	M	M	M	M	M
70-71	M	M	M	M	M	M	M	M	M	M	M	M	M
71-72	M	M	M	M	M	M	M	M	M	M	M	M	M
72-73	M	M	M	M	M	M							M

The Degree Day total for the month is the sum of the departures of the daily mean temperatures from the base of 65°F.

"M" indicates missing record; "P" denotes partial record, i.e. less than 10 days record missing.

CHINA LAKE, CALIFORNIA

EXHIBIT 130

U.S. WEATHER BUREAU TECHNICAL PAPER NUMBER 40, RAINFALL FREQUENCY ATLAS OF THE UNITED STATES

This publication is intended to be a convenient summary of empirical relationships, working guides, and maps useful in practical problems requiring rainfall-frequency data. It is an outgrowth of several previous U.S. Weather Bureau (now National Weather Service) publications on this subject and contains an expansion and generalization of the ideas and results presented in earlier papers. The atlas is divided into two parts as follows:

1. The first part presents the rainfall analyses. Included are measures of the quality of the various relationships, comparisons with previous work of similar nature, numerical examples, discussions of the limitations of the results, transformation from point to areal frequency, and seasonal variation.

2. The second part presents 49 rainfall frequency maps based on a comprehensive and integrated collection of statistics, related maps, and seasonal variation diagrams. The rainfall frequency maps are for selected durations from 30 minutes to 24 hours and return periods from 1- to 100-years.

This publication is out of print, but paper copies are available from the National Climatic Center. Although published in 1961, the precipitation-frequency data are still valid with the following exceptions:

1. NOAA Atlas 2, Precipitation-Frequency Atlas of the Western United States, supersedes this publication for the 11 western States. Reference page 118 for further information.

2. NOAA Technical Memorandum NWS Hydro-35, Five to Sixty-Minute Precipitation Frequency for the Eastern and Central United States, supersedes this publication for time periods of one hour or less. Reference page 119 for further information.

U.S. WEATHER BUREAU TECHNICAL PAPERS

The U.S. Weather Bureau Technical Paper Series contains 58 numbered papers. The complete series is listed below, with the year of publication for each. Many are out of print; the publications annotated with an asterisk are still available for purchase from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402. All these papers have been filmed. The National Climatic Center can furnish paper or microfilm copy of any publication for the cost of reproduction.

No. 1. 10-year normals of pressure tendencies and hourly station pressures for the United States. 1943. A supplement was issued in 1945 and titled, Normal 3-hourly pressure changes for the United States at the intermediate synoptic hours.

No. 2. Maximum recorded United States point rainfall for 5 minutes to 24 hours at 207 First Order Stations. Rev. 1963.

No. 3. Extreme temperatures in the upper air. 1947.

No. 4. Topographically adjusted normal isohyetal maps for western Colorado. 1947.

No. 5. Highest persisting dew points in western United States. 1948.

No. 6. Upper air average values of temperature, pressure, and relative humidity over the United States and Alaska. 1945.

No. 7. A report on thunderstorm conditions affecting flight operations. 1948. Reprinted 1949.

No. 8. The climatic handbook for Washington, DC. 1949.

No. 9. Temperature at selected stations in the United States, Alaska, Hawaii, and Puerto Rico. 1949.

*No. 10. Mean precipitable water in the United States. 1949.

*No. 11. Weekly mean values of daily total solar and sky radiation. 1949. Supplement No. 1, 1955.

No. 12. Sunshine and cloudiness at selected stations in the United States, Alaska, Hawaii, and Puerto Rico. 1951.

*No. 13. Mean monthly and annual evaporation data from free water surface for the United States, Alaska, Hawaii, and the West Indies. 1950.

No. 14. Tables of precipitable water and other factors for a saturated pseudo-adiabatic atmosphere. 1951.

No. 15. Maximum station precipitation for 1, 2, 3, 6, 12, and 24 hours: Part I: Utah, 1951; Part II: Idaho, 1951; Part III: Florida, 1952; Part IV: Maryland, Delaware, and District of Columbia, 1954; Part V: New Jersey, 1953; Part VI: New England, 1953; Part VII: South Carolina, 1953; Part VIII:

Virginia, 1954; Part IX: Georgia, 1954; Part X: New York, 1954; Part XI: North Carolina, 1955; Part XII: Oregon, 1955; Part XIII: Kentucky, 1955; Part XIV: Louisiana, 1955; Part XV: Alabama, 1955; Part XVI: Pennsylvania, 1956; Part XVII: Mississippi, 1956; Part XVIII: West Virginia, 1956; Part XIX: Tennessee, 1956; Part XX: Indiana, 1956; Part XXI: Illinois, 1958; Part XXII: Ohio, 1958; Part XXIII: California, 1959; Part XXIV: Texas, 1959; Part XXV: Arkansas, 1960; Part XXVI: Oklahoma, 1961.

No. 16. Maximum 24-hour precipitation in the United States. 1952.

*No. 17. Kansas-Missouri floods of June-July 1951. 1952.

No. 18. Measurements of diffuse solar radiation at Blue Hill Observatory. 1952.

No. 19. Mean number of thunderstorm days in the United States. 1952.

*No. 20. Tornado occurrences in the United States. Rev. 1960.

No. 21. Normal weather charts for the Northern Hemisphere. 1952.

No. 22. Wind patterns over lower Lake Meade. 1953.

*No. 23. Floods of April 1952-Upper Mississippi, Missouri, Red River of the North. 1954.

*No. 24. Rainfall intensities for local drainage design in the United States. For durations of 5 to 240 minutes and 2-, 5-, and 10-year return periods. Part I: West of the 115th meridian. 1953; Part II: Between 105°W and 115°W. 1954.

No. 25. Rainfall intensity-duration-frequency curves. For selected stations in the United States, Alaska, Hawaiian Islands, and Puerto Rico. 1955.

*No. 26. Hurricane rains and floods of August 1955, Carolinas to New England. 1956.

No. 27. The climate of Matanuska Valley. 1956.

No. 28. Rainfall intensities for local drainage design in western United States. For durations of 20 minutes to 24 hours and 1- to 100-year return periods. 1956.

*No. 29. Rainfall intensity-frequency regime. Part I: The Ohio Valley, 1957; Part II: Southeastern United States, 1958; Part III: The Middle Atlantic Region, 1958; Part IV: Northeastern United States, 1959; Part V: Great Lakes Region, 1960.

*No. 30. Tornado deaths in the United States. 1957.

No. 31. Monthly normal temperatures, precipitation, and degree days. 1956.

No. 32. Upper air climatology of the United States. Part I: Averages for isobaric surfaces, height, temperature, humidity, and density, 1957; Part II: Extremes and standard deviations of average heights and temperatures, 1958; Part III: Vector winds and shear, 1959.

*No. 33. Rainfall and floods of April, May, and June 1957 in the South Central United States. 1958.

*No. 34. Upper wind distribution statistical parameter estimates. 1958.

*No. 35. Climatology and weather services of the St. Lawrence Seaway and Great Lakes. 1959.

No. 36. North Atlantic tropical cyclones. 1959.

*No. 37. Evaporation maps of the United States. 1959.

No. 38. Generalized estimates of probable maximum precipitation for the United States west of the 105th meridian for areas to 400 square miles and durations to 24 hours. 1960

No. 39. Verification of the Weather Bureau's 30-day outlook. 1961.

No. 40. Rainfall frequency atlas of the United States for durations from 30 minutes to 24 hours and return periods for 1 to 100 years. 1961.

*No. 41. Meridional cross sections, upper winds over the Northern Hemisphere. 1961.

*No. 42. Generalized estimates of probable maximum precipitation and rainfall-frequency data for Puerto Rico and Virgin Islands. 1961.

*No. 43. Rainfall-frequency atlas of the Hawaiian Islands for areas to 200 square miles, durations to 24 hours, and return periods from 1 to 100 years. 1962.

*No. 44. A catalog of 100 FCC-position transosonde flights. 1962.

*No. 45. Snowmelt floods of March-April 1960, Missouri and Upper Mississippi basins. 1962.

*No. 46. Atmospheric electric measurement results at Mauna Loa Observatory. 1962.

*No. 47. Probable maximum precipitation and rainfall-frequency data for Alaska for areas to 400 square miles, durations to 24 hours, and return periods from 1 to 100 years. 1963.

*No. 48. Characteristics of the hurricane storm surge. 1963.

*No. 49. Two- to ten-day precipitation for return periods of 2 to 100 years in the contiguous United States. 1964.

*No. 50. Frequency of maximum water equivalent of March snow cover in North Central United States. 1964.

*No. 51. Two- to ten-day rainfall for return periods of 2 to 100 years in Hawaiian Islands. 1965.

*No. 52. Two- to ten-day precipitation for return periods of 2 to 100 years in Alaska. 1965.

*No. 53. Two- to ten-day rainfall for return periods of 2 to 100 years in Puerto Rico and Virgin Islands. 1965.

*No. 54. Meteorological summaries pertinent to atmospheric transport and dispersion over southern California. 1965.

*No. 55. Tropical cyclones of the North Atlantic Ocean. 1965. Tropical Cyclones of the North Atlantic Ocean, 1871-1977. June 1978.

*No. 56. Interdiurnal variability of pressure and temperature in the conterminous United States. 1966.

*No. 57. Normal monthly number of days with precipitation of 0.5, 1.0, 2.0, and 4.0 inches or more in the conterminous United States. 1966.

*No. 58. A catalog of radar-positioned, constant-volume balloon (Tetroon) flights. 1966.

Information contained in these Technical Papers is no longer valid.

WORLDWIDE AIRFIELD SUMMARIES

This summary series presents monthly and annual climatological information for approximately 3,000 airfields and climatic areas throughout the world (Exhibits 131 and 132). The data presented in this series were assembled on magnetic tape by the Environmental Technical Applications Center, Air Weather Service, U.S. Air Force, and from numerous sources including foreign publications. The magnetic tapes were made available to the U.S. Naval Oceanography Command for compilation into book form. The summaries were published from 1970 through 1974 in 12 volumes, 27 parts.

Published volumes in this series may be purchased from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161. Listed below are the volume number, title, and NTIS accession number for each publication in this series.

Volume		Name	NTIS Accession Number
Volume I		Southeast Asia (Revised)	AD-706-355
Volume II (Parts 1 & 2)		Middle East	AD-002-162 & AD-002-163
Volume III		Far East	AD-662-426
Volume IV		Canada-Greenland-Iceland	AD-662-424
Volume V		Australia-Antarctica (including South Pacific Is.)	AD-662-648
Volume VI (Parts 1 & 2)		South America	AD-664-828 & AD-664-829
Volume VII		Central America	AD-671-845
Volume VIII		United States of America	
	Part 1	West Coast, Western Mtns & Great Basin	AD-688-472
	Part 2	Rocky Mtns. and Northwest Basin	AD-689-792
	Part 3	Central Plains	AD-693-491
	Part 4	Great Lakes	AD-696-971
	Part 5	Mississippi Valley	AD-699-917
	Part 6	Southeastern Region	AD-701-719
	Part 7	East Coast and Appalachian Region	AD-703-606
	Part 8	Alaska and Hawaii	AD-704-607
Volume IX		Africa	
	Part 1	Northern Half	AD-680-433
	Part 2	Southern Half	AD-682-915
Volume X		Europe	
	Part 1	Scandinavia & Northern Europe	AD-719-907
	Part 2	Low Countries & British Isles	AD-719-908
	Part 3	Alps & Southwest Europe	AD-720-708
	Part 4	Mediterranean	AD-720-160
Volume XI		Eastern Europe and USSR	
	Part 1	Eastern Europe	AD-776-611
	Part 2	USSR	AD-776-612
Volume XII		China, North Korea, and Mongolia	
	Part 1	China	AD-776-615
	Part 2	China, North Korea, and Mongolia	AD-776-616

ROTA, SPAIN

STA NO. 08449 (IN AREA NUMBER 04) LATITUDE 3639N LONGITUDE 00621W ELEVATION(FT) 00088

PARAMETER DESCRIPTION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	POR (YRS)	NO. OBS
ABS MAX TMP (F)	72	77	79	88	96	101	104	106	106	91	79	73	106	11	3928
MEAN MAX TMP (F)	61	62	65	69	76	79	84	85	81	75	65	60	72	11	3968
MEAN MIN TMP (F)	46	47	50	53	57	62	66	66	63	58	51	46	55	11	3968
ABS MIN TMP (F)	31	33	37	42	47	52	51	51	46	41	38	31	31	11	3928
MEAN NO DYS TMP = OR GTR 90(F)	0.0	0.0	0.0	0.0	1.3	2.7	6.1	8.4	3.5	0.1	0.0	0.0	22.1	11	3968
MEAN NO DYS TMP = OR LES 32(F)	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	11	3968
MEAN NO DYS TMP = OR LES 0(F)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11	3968
MEAN DEW PT TMP (F)	47	48	49	51	54	59	62	62	61	57	52	47	54	10	90565
MEAN REL HUM (PCT)	82	80	75	72	66	67	67	66	71	74	81	83	74	11	96343
MEAN PRESS ALT (FT)	-146	-95	-27	5	6	-17	-16	9	-6	-23	-38	-97	-36	0	-50
MEAN PRECIP (IN)	2.60	3.43	2.95	1.23	1.43	0.57	0.00	0.05	0.86	3.34	4.39	4.19	25.0	11	3928
MEAN SNOW FALL (IN)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11	3928
MEAN NO DYS PRCP = OR GTR 0.1 IN	5.9	8.0	5.9	3.6	3.1	1.3	0.0	0.2	1.7	4.6	6.1	6.9	47.3	11	3928
MEAN NO DYS SNFL = OR GTR 1.5 IN	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11	3928
MEAN NO DYS W/OCUR VSBY LES 1/2 MI	0.6	0.4	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.2	0.3	0.3	2.3	11	96342
MEAN NO DYS TSTMS	1.2	2.2	1.7	1.5	0.9	1.0	0.1	0.2	1.1	2.2	2.5	2.4	17.0	11	3963
P FREQ WND SPD = OR GTR 17 KTS	3.1	3.8	4.9	1.7	1.7	1.6	1.3	2.1	1.6	2.9	2.8	4.0	2.6	10	87110
P FREQ WND SPD = OR GTR 28 KTS	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	10	87110
P FREQ LES 5000 FT A/D LES 5 MI	29.2	27.0	29.2	18.0	18.8	14.5	9.8	5.1	12.8	16.0	25.1	33.9	20.0	8	58330
P FREQ LES 1500 FT A/D LES 3 MI															
FOR 00-02 LST	8.3	6.9	7.1	3.5	5.1	3.3	2.2	1.1	3.1	5.4	7.7	8.3	5.2	8	7294
03-05 LST	11.4	8.4	11.2	5.2	6.5	4.1	4.7	0.7	5.6	6.6	9.6	8.8	6.9	8	7296
06-08 LST	10.6	10.4	11.8	6.3	11.7	9.6	9.3	2.3	8.3	7.9	7.5	12.3	9.0	8	7290
09-11 LST	13.4	11.3	10.9	5.1	8.1	6.3	3.6	3.2	4.8	6.5	9.5	13.7	8.0	8	7290
12-14 LST	11.4	9.6	10.3	2.7	5.1	2.0	2.0	0.9	2.8	4.2	7.1	10.2	5.7	8	7293
15-17 LST	9.7	8.1	8.0	3.0	3.5	0.6	0.2	0.2	1.5	4.0	6.0	9.4	4.5	8	7293
18-20 LST	9.2	8.2	7.1	1.7	2.2	0.9	0.9	0.2	0.6	3.7	8.1	11.9	4.6	8	7299
21-23 LST	7.4	6.1	5.2	1.7	4.5	1.9	1.4	0.9	1.1	3.8	5.6	8.0	4.0	8	7299
P FREQ LES 300 FT A/D LES 1 MI															
FOR 00-02 LST	2.0	2.2	1.2	0.0	0.6	0.0	0.2	0.0	0.0	1.2	1.0	0.9	0.8	8	7294
03-05 LST	3.8	4.0	2.6	0.5	0.9	0.0	0.2	0.0	0.7	1.1	3.2	2.0	1.6	8	7296
06-08 LST	5.1	4.5	3.4	1.3	1.7	2.2	2.3	0.0	1.3	2.5	2.6	2.9	2.5	8	7290
09-11 LST	5.1	3.4	1.8	0.3	0.8	0.2	0.4	0.2	0.7	0.9	2.1	2.9	1.6	8	7290

MORON DE LA FRONTERA, SPAIN

MEAN NUMBER OF DAYS

PARAMETER DESCRIPTION		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN	POR (YRS)	NO. OBS
CIG = GTR 1000 FT AND	00 LST	29.0	26.7	30.0	29.7	30.6	30.0	31.0	31.0	30.0	30.6	29.5	28.7	356.8	10	3592
VSBY = GTR 3 MI	06 LST	27.5	26.0	29.1	28.9	30.5	29.7	30.8	30.9	29.9	30.3	28.4	27.8	349.8	10	3632
	12 LST	28.5	26.9	30.1	29.7	30.8	29.9	31.0	31.0	29.8	31.0	29.3	29.9	357.9	10	3633
	18 LST	29.1	27.3	30.4	29.8	30.8	30.0	31.0	31.0	30.0	30.6	29.1	29.4	358.5	10	3591
CIG =GTR 2000 FT AND VSBY =GTR	00 LST	23.3	20.8	23.4	25.0	26.0	24.2	25.4	24.9	24.3	25.8	25.0	22.6	290.7	10	3592
3 MI W/SFC WND LES 10 KTS	06 LST	22.2	20.8	22.2	26.1	26.6	27.0	28.1	29.2	27.4	26.6	24.3	22.0	302.5	10	3632
	12 LST	17.6	17.4	16.7	18.5	21.4	21.1	24.2	25.4	22.8	21.1	18.6	16.7	241.5	10	3633
	18 LST	22.9	19.3	17.6	16.1	13.9	10.6	9.8	13.7	12.1	19.4	22.4	22.9	200.7	10	3591
SFC WND = GTR 17 KTS AND	00 LST	0.3	0.7	0.2	0.4	0.0	0.5	0.0	0.0	0.1	0.3	0.2	0.4	3.1	10	3592
NO PRECIP.	06 LST	0.8	0.3	0.3	0.1	0.2	0.0	0.0	0.1	0.3	0.0	0.3	0.6	3.0	10	3632
	12 LST	1.1	1.7	1.9	1.5	1.1	0.5	0.1	0.5	0.9	1.9	1.4	2.6	15.2	10	3633
	18 LST	0.9	1.2	1.2	2.0	2.6	3.2	2.1	2.4	1.4	0.6	0.3	0.8	18.7	10	3591
SFC WND 4-10 KTS AND TMP 33-89	00 LST	13.7	12.0	16.4	17.0	17.6	17.7	22.0	20.1	17.4	15.6	13.7	13.5	196.7	10	3592
DEG F AND NO PRECIP.	06 LST	11.6	11.7	12.1	11.6	11.2	12.1	11.8	12.4	11.8	13.3	13.0	11.1	143.7	10	3632
	12 LST	12.7	12.0	12.1	16.1	17.2	16.0	12.9	11.7	14.5	15.4	15.6	12.8	169.0	10	3633
	18 LST	13.3	12.6	17.1	14.7	14.4	9.4	4.7	3.8	8.9	15.5	14.0	13.5	141.9	10	3591
SKY COVER LES 3/10 AND	00 LST	12.4	13.4	13.9	14.1	19.5	21.1	28.6	27.5	20.5	18.0	14.7	14.7	218.4	10	3592
VSBY = GTR 3 MI	06 LST	12.4	12.7	11.4	10.8	15.8	16.1	26.2	24.9	16.3	15.4	12.4	14.5	188.9	10	3631
	12 LST	8.1	9.0	8.2	8.0	12.8	14.1	26.1	24.0	13.7	12.1	7.7	9.8	153.6	10	3633
	18 LST	8.3	8.8	7.9	9.8	12.7	15.9	27.4	24.8	15.1	11.2	8.2	9.8	159.9	10	3591
CIG = GTR 2500 FT AND	00 LST	26.9	24.9	28.4	28.4	29.8	29.8	30.6	30.6	29.2	29.4	28.7	27.5	344.2	10	3592
VSBY = GTR 3 MI	06 LST	26.1	24.1	26.7	27.4	29.3	28.5	29.4	30.3	27.8	28.8	27.2	26.0	331.6	10	3632
	12 LST	26.2	24.1	26.9	27.9	28.9	29.2	30.8	30.6	29.3	29.4	27.3	25.9	336.5	10	3633
	18 LST	27.6	26.1	28.9	29.1	30.1	29.9	31.0	31.0	29.8	30.1	27.4	27.4	348.4	10	3591
CIG = GTR 6000 FT AND	00 LST	24.0	22.0	24.4	27.1	28.4	28.8	30.6	30.5	28.6	27.3	24.8	22.9	319.4	10	3592
VSBY = GTR 3 MI	06 LST	21.5	20.6	23.1	24.5	27.1	26.2	29.3	30.0	27.0	26.5	23.7	22.1	301.6	10	3632
	12 LST	22.5	20.6	21.2	22.5	24.8	25.7	30.2	30.0	26.5	25.8	23.9	21.7	295.4	10	3633
	18 LST	23.0	21.7	25.1	26.5	28.8	28.7	30.9	31.0	28.8	26.2	23.2	21.4	315.3	10	3591
CIG = GTR 10000 FT AND	00 LST	22.0	20.5	22.7	25.6	27.4	28.0	30.4	30.2	27.6	24.9	23.0	20.4	302.7	10	3592
VSBY = GTR 3 MI	06 LST	19.6	18.3	20.8	23.0	25.6	25.3	29.1	29.9	25.2	24.4	21.2	20.4	282.8	10	3632
	12 LST	20.2	18.4	18.9	21.1	23.7	24.1	30.1	29.9	25.5	23.2	20.5	19.4	275.0	10	3633
	18 LST	20.0	19.2	22.4	24.2	27.6	27.3	30.8	30.8	27.4	23.1	19.7	19.4	291.9	10	3591

PART V

DATA CATALOGS AND INDEXES

V

FGGE DATA CATALOGUE

This catalogue, issued in looseleaf form, provides information on the meteorological and oceanographic data collected during the First GARP Global Experiment (FGGE) that have been transferred to World Data Center-A (WDC-A) for Meteorology, and on associated data in the national archives. The purpose of FGGE was to observe the atmosphere over the entire earth and the sea surface in detail for the first time. The build-up and testing period was December 1977 through November 1978; the Global Observation phase was December 1978 through November 1979. Nearly all the data described in this catalogue are on magnetic tape only. The basic catalogue was issued September 1978; Supplements will be issued at three-month intervals as long as appropriate. Copies of this catalogue, including Supplements, may be obtained from the WDC-A for Meteorology at the National Climatic Center, Federal Building, Asheville, NC 28801.

GATE DATA CATALOGUE

This catalogue provides information on the meteorological (surface and upper air) and oceanographic (sub-surface) data transferred to the World Data Center-A (WDC-A) for Meteorology in the United States from the officially designated National Processing Centers and the international Subprogram Data Centers. GATE was the first international experiment of the Global Atmospheric Research Program (GARP). The data described in this catalogue were collected over the tropical Atlantic Ocean and adjacent land areas during the period June 17 through September 23, 1974. The name GATE comes from Global Atmospheric Research Program (GARP) Atlantic Tropical Experiment. This catalogue will be updated and expanded by Supplements as additional data are received. Copies of this catalogue, including Supplements, may be obtained from the WDC-A for Meteorology at the National Climatic Center, Federal Building, Asheville, NC 28801.

GUIDE TO STANDARD WEATHER SUMMARIES AND CLIMATIC SERVICES

This U.S. Naval Oceanography Command publication, NAVAIR 50-1C-534, provides descriptions and examples of 22 selected surface and upper air published and unpublished climatological data summaries and a list of stations throughout the world for which one or more of these summaries are available. The number of years of record upon which each summary is based is shown (Exhibit 133).

This publication is revised and updated periodically. Copies of the latest issue, January 1978, may be purchased from the National Technical Information Service (NTIS), U. S. Deparment of Commerce, 5285 Port Royal, Springfield, VA 22161. The NTIS Order Number is AD-A047 482.

EXHIBIT 133

NAVAIR 50-1C-534

FOR EXPLANATION AND ILLUSTRATION OF SUMMARIES SEE PAGE 1

WMO NUMBER	WBAN NUMBER	STATION	LOCATION LATITUDE	LOCATION LONGITUDE	ELEV IN FEET	SURFACE: COND CLIM	STATION CLIM SUM	SURFACE WIND TAB	SHIPS SUM STN WET CHR	CEILING VISBY WIND TAB	WORLD WIDE ASTLO SUM	SHIPS SUM WET CHR SPC	STABILITY TABS	USAF A, B & C SUM	USAF D SUMMARY	USAF E SUMMARY	USAF R SUMMARY	RUSSIAN			UPPER AIR: WRAN TR WIND TABS	WMO TR CONTINENTAL	WMO TR CONTINENTAL	N - TYPE WIND NOISE	WRAN TR SEASONAL	WRAN TR CONTINENTAL	WMO TR CONTINENTAL	ROCKETSONDE WINDS	ROCKETSONDE TEMP & RH	WRAN TD	RADIOSONDE SUM NON-RAS/LAN	SUM & STATS RWS	SUM (WINDS INCLUDED)		
							3	6	8	9	17	18	22	42	45	59	60	61	80			81	81	83	81	81	84	85	87	88	90			
		ALASKA																																	
70454	*25704	ADAK NAS	N5153	W17638	14	16	24			0	23			8			22							10			32	16						
	45701	ALEXAI PT	N5230	E17919	27								2																					
70439	45702	AMCHITKA ISLAND	N5123	E17915	202	6	8		5				5	5	5		6					5					5	3						
70273	26451	ANCHORAGE INT APT	N6110	W14959	124	11				0		6																						
70272	26401	ANCHORAGE/ELMENDORF AFB	N6115	W14948	176	26	39	10	10	0		20	21	21	9		30					11					36	24						
70232	26516	ANIAK	N6135	W15932	81					0			11				22																	
70398	25308	ANNETTE ISLAND	N5502	W13135	114					0			5	10			19			11							29	21						
70409	*45709	ATTU ALEUTIAN ISLANDS NAU	N5248	E17310	92		12										8					3					8							

INDEX OF HISTORICAL SURFACE WEATHER RECORDS FOR (STATE)

This is a series of indexes, planned to be prepared for each State, to present a synthesis of station histories and related information from a variety of published and unpublished sources. Stations included in these indexes are selected on the basis of the existence of recorded data over a period of at least 5 years (not necessarily continuous) during the 1800s. Exceptions are made if the records began after 1895 but are continuous without interruption up to the year of index preparation. The following information is given for each station: name and index number, geographic coordinates (latitude and longitude), period of available record, ground elevation, type of instruments used, time(s) of observation, known sources of published data, and any pertinent remarks that might aid in the interpretation of the recorded data. Also included are stationlocation maps for each decade of the 19th Century, an index of stations with 80 or more years of record, and a listing of stations for which the monthly means of maximum, minimum and average temperatures and monthly total precipitation amounts are available on magnetic tape for the period of record through 1930.

New York was the first state for which this index was published. Similar indexes will be published for additional states as time and funds permit. Copies of existing publications in this series may be obtained from the National Climatic Center, Federal Building, Asheville, NC 28801.

INDEX OF ORIGINAL SURFACE WEATHER RECORDS (Hourly, Synoptic and Autographic)

Indexes have been prepared for each of the 50 states, for the Pacific Islands, and for Puerto Rico and the U. S. Virgin Islands combined (information for the District of Columbia is included in the Maryland index). They present for each State or area a listing of the hourly aviation, synoptic, supplementary airways, and similar observations that are available in manuscript form for each of the 52 States or areas. Information about records similar to the cooperative climatological station°s daily observations and those filed by the National Archives is not included in these indexes.

The indexes are presented in four ways: alphabetic by station, by year, by elevation, and by latitude (Exhibits 134, 135, 136, and 137). Information is included about unusual records and autographic charts.

These indexes are updated periodically. Copies of these indexes may be obtained from the National Climatic Center, Federal Building, Asheville, NC 28801.

EXHIBIT 134

RECORDS INDEX ALPHABETIC BY STATION NAME

IOWA

NAME	TYPE	YEAR	LAT.	LONG.	ELEV.	HOURLY RECORDS BY MONTH (1 = 24 OBS PER DAY) J	F	M	A	M	J	J	A	S	O	N	D	NUMBER OF MONTHS IN YEAR WITH: SYNOPTIC FORM	METL SUMMARY	BAROGRAMS	THERMOGRAMS	TRIPLE REGISTER	WIND RECORDER	HUMIDITY RECORDER	RADAR LOGS	WBAN NUMBER
ADAIR	A	1929	41 30N	94 39W	1320				3	3	3	3	3	3	3	3	3									
	CAA	1930	41 30N	94 39W	1320	3	3	6	1	1	1	1	1	1	1	1	1									
	CAA	1931	41 30N	94 39W	1320	1	1	1	1	1	1	1	1	1	1	1	1									
	CAA	1932	41 30N	94 39W	1320	1	1	1	1	1	1	1	1	1	1	1	1									
	CAA	1933	41 30N	94 39W	1320	1	1	1	1	1	1	1	1	1	1	1	1									
	CAA	1934	41 30N	94 39W	1320	1	1	1	1	1	1	1	1	1	1	1	1									
	CAA	1935	41 30N	94 39W	1320	1	1	1	1	1	1	1	1	1	1	1	1									
	CAA	1936	41 30N	94 39W	1320	1	1	1	1	1	1	1	1	1	1	1	1									
	CAA	1937	41 30N	94 39W	1320	1	1	1	1	1	1	1	1	1	1	1	1									
	CAA	1938	41 30N	94 39W	1320	1	1	1	1	1	1	1	1	1	1	1	1									
	CAA	1939	41 30N	94 39W	1320	1	1	1	1	1	1	1	1	1	1	1	1									
	CAA	1940	41 30N	94 39W	1320	1	1	1	1																	

EXHIBIT 135

RECORDS INDEX ARRANGED BY YEAR

IOWA

YEAR	NAME	TYPE	LAT.	LONG.	ELEV.	HOURLY RECORDS BY MONTH (1 = 24 OBS PER DAY) J	F	M	A	M	J	J	A	S	O	N	D	NUMBER OF MONTHS IN YEAR WITH: SYNOPTIC FORM	METL SUMMARY	BAROGRAMS	THERMOGRAMS	TRIPLE REGISTER	WIND RECORDER	HUMIDITY RECORDER	RADAR LOGS	WBAN NUMBER
1932	GRAND MOUND	A	41 48N	90 40W	670	3	3	3	3	3	3	3	3	3	3	3	3									
	HAWARDEN	A	42 59N	96 28W	1174	3	3	3	3	3	3	3	3	3	3	3	3							04		
	KEOKUK	WBO	40 24N	91 24W	616														12	12	12	12				
	ONAWA	A	42 02N	96 06W	1051	3	3					3	3	3	3	3	3									14984
	SIOUX CITY	WBO	42 30N	96 24W	1138														12	12	12	12				14987
1933	ADAIR	CAA	41 30N	94 39W	1320	1	1	1	1	1	1	1	1	1	1	1	1									
	BURLINGTON	A	40 47N	91 07W	700	1	1	1	1	1	1	1	1	1	1	1	1									14931
	CHARLES CITY	WBO	43 04N	92 40W	1020														12	12	12	12				14966
	DAVENPORT	WBO	41 31N	90 34W	619														12		12	12				14932
	DES MOINES	WBO	41 35N	93 37W	872														12	12	12	12				14967
	DES MOINES	CAA	41 31N	93 38W	969			6	1	1	1	1	1	1	1	1	1									14933
	DUBUQUE	WBO	42 30N	90 40W	649														12	12	12	12				14934
	GRAND MOUND	A	41 48N	90 40W	670	3	3	3	3	3	3	3	3	3	3	3	3									

EXHIBIT 136

BY ELEVATION

IOWA

ELEV.	NAME	TYPE	LAT.	LONG.	WBAN NUMBER
546	MUSCATINE	SAWR	41 22N	91 08W	
568	DAVENPORT	COOP	41 31N	90 34W	
570	KEOKUK	COOP	40 24N	91 23W	
574	KEOKUK	COOP	40 24N	91 23W	
606	DAVENPORT	WBO	41 31N	90 34W	14932
611	DAVENPORT	ASC	41 31N	90 35W	14932
614	KEOKUK	ASC	40 24N	91 24W	
614	KEOKUK	WBO	40 24N	91 24W	
616	KEOKUK	WBO	40 24N	91 24W	
618	KEOKUK	ASC	40 24N	91 24W	
619	DAVENPORT	COOP	41 31N	90 34W	14932
619	DAVENPORT	WBO	41 31N	90 34W	14932
621	DAVENPORT	ASC	41 31N	90 35W	14932
621	DAVENPORT	WBO	41 31N	90 35W	14932
649	DUBUQUE	WBO	42 30N	90 40W	14934
649	OTTUMWA	COOP	41 01N	92 28W	
651	DUBUQUE	WBO	42 30N	90 40W	14934
652	DUBUQUE	WBO	42 30N	90 40W	14934
656	IOWA CITY	CAA	41 38N	91 33W	14937
656	IOWA CITY	SAWR	41 38N	91 33W	14937
658	IOWA CITY	SAWR	41 38N	91 34W	14937
661	DAVENPORT	WBO	41 31N	90 34W	14932
670	GRAND MOUND	A	41 48N	90 40W	
670	KEOKUK	SAWR	40 28N	91 26W	14969
680	DUBUQUE	WBO	42 30N	90 40W	14934

EXHIBIT 137

BY LATITUDE

IOWA

LAT.	NAME	TYPE	LONG.	WBAN NUMBER
43 17N	DECORAH	SAWR	91 45W	
43 13N	SHELDON	SAWR	95 50W	
43 11N	MASON CITY	COOP	93 12W	
43 10N	MASON CITY	CAA	93 20W	14940
43 10N	MASON CITY	FAA	93 20W	14940
43 10N	SPENCER	A	95 12W	14972
43 10N	SPENCER	S	95 12W	14972
43 10N	SPENCER	S	95 09W	14972
43 10N	SPENCER	SA	95 09W	14972
43 10N	SPENCER	SAWR	95 12W	
43 09N	MASON CITY	A	93 17W	14940
43 09N	MASON CITY	CAA	93 17W	14940
43 09N	MASON CITY	FAA	93 20W	14940
43 06N	EMMETSBURG	A	94 41W	
43 04N	CHARLES CITY	WBO	92 40W	14966
42 59N	HAWARDEN	A	96 28W	
42 44N	POCAHONTAS	SAWR	94 38W	
42 33N	FORT DODGE	SAWR	94 11W	
42 33N	WATERLOO	SAWR	92 24W	94910
42 33N	WATERLOO	WBAS	92 24W	94910
42 33N	WATERLOO	WSO	92 24W	94910
42 31N	IOWA FALLS	WBO	93 16W	14979
42 30N	DUBUQUE	WBO	90 40W	14934
42 30N	SIOUX CITY	WBO	96 24W	14967
42 29N	SIOUX CITY	WBO	96 23W	14967

INDEX OF SURFACE MARINE CLIMATIC DATA PRODUCTS

This index, revised in April 1979, shows sample formats of data summaries and compilations that have been produced by the National Climatic Center (NCC) utilizing the observational data contained in its Tape Deck-11, Surface Marine Observations. Although this publication does not contain a list of the geographic areas for which the various materials have been prepared, that information can be supplied by NCC when the type of data summary required is determined.

INDEX - SUMMARIZED WIND DATA

This index was published in September 1977 and provides an inventory and descriptions (with examples of format) of all types of wind data summaries that were available from the National Climatic Center as of January 1977. It is presented in two parts. Part I (Exhibit 138) is a Geographical list, alphabetized in State-city order, presenting all the available wind summaries for each station without regard to the type of summary. Part II (Exhibit 139) is a Summary Type list of the stations identified in Part I. The stations in Part II are alphabetized in State-city order. Each entry in Parts I and II shows the station elevation, geographical coordinates (latitude and longitude), and the period of record upon which the summary is based. Copies of this published index may be obtained from the National Climatic Center, Federal Building, Asheville, NC 28801.

INTERNATIONAL FIELD YEAR FOR THE GREAT LAKES (IFYGL) DATA CATALOGUE: UNITED STATES DATA ARCHIVE

IFYGL was a two-nation (United States and Canada) coordinated program of research into the physical, chemical, and biological aspects of Lake Ontario in 1972 and 1973. This 203 page catalogue, issued in September 1978 as NOAA Technical Memorandum EDIS NCC-3, describes the data that are archieved by the National Climatic Center. Copies of this catalogue may be obtained from the National Climatic Center, Federal Building, Asheville, NC 28801.

EXHIBIT 138

STATE: FLORIDA

CITY	NAME - TYPE	ST	WBAN #	WMO #	LAT	LONG	ELEV	PERIOD OF RECORD	SUMMARY TYPE	SUMM FREQ	TAB#/REMARKS
APPALACHICOLA	WBO	FL	12832	72220	29 44N	084 59W	0010	01 39 - 12 43	ASWR	A	
AVON PARK	AFB	FL	12804	74796	27 28N	081 20W	0020	12 43 - 12 70	A-F	MA	1,2
AVON PARK	AAF	FL	12804	74796	27 39N	081 20W	0021	12 43 - 09 45	ABC	MA	
BARTOW	AAF	FL	12809		27 57N	081 47W	0040	04 44 - 10 45	ABC	MA	
BOCA RATON	AAF	FL	12803		26 22N	080 06W	0005	12 42 - 11 47	AB	MA	
BROOKSVILLE	AAF	FL	12818		28 29N	082 27W	0023	12 43 - 03 44	AB	MA	45
C CANAVERAL AFS	CAPE KENNEDY AFB	FL	12868	74797	28 29N	080 33W	0005	05 50 - 06 57	AB	MA	TCL5303,24,28
C CANAVERAL AFS	CAPE KENNEDY AFB	FL	12868	74794	28 29N	080 33W	0005	05 50 - 05 61	AB	MS	TCL6768,3,24
C CANAVERAL AFS	CAPE KENNEDY AFB	FL	12868	74797	28 29N	080 33W	0005	05 50 - 06 57	WND TAB	M	T1121,40
C CANAVERAL AFS	CAPE KENNEDY AFB	FL	12868	74794	28 29N	080 33W	0005	06 50 - 07 62	ABC	MA	
C CANAVERAL AFS	CAPE KENNEDY AFS	FL	12868	74794	28 29N	080 33W	0005	06 50 - 04 66	A-F	MA	1,2
C CANAVERAL AFS	CAPE KENNEDY AFB	FL	12868	74794	28 29N	080 33W	0005	12 56 - 11 64	WND TAB	MA	T5389,28
C CANAVERAL AFS	CAPE KENNEDY AFB	FL	12868	74794	28 29N	080 33W	0005	01 57 - 12 62	SMAR	MA	
C KENNEDY AFB	CAPE CANAVERAL AFS	FL	12868	74794	28 29N	080 33W	0005	08 50 - 12 70	A-F	MA	1,2,57
C KENNEDY AFB	CAPE CANAVERAL AFS	FL	12868	74794	28 29N	080 33W	0005	10 56 - 05 64	WND TAB	M	T5864,28
C KENNEDY AFB	CAPE CANAVERAL AFS	FL	12868	74794	28 29N	080 33W	0005	01 67 - 12 69	WND TAB	M	T6913,58
CLEWISTON	MUNICIPAL APT	FL	12872		26 40N	081 00W	0007	09 42 - 09 45	ASWR	A	
COCOA	BANANA RIVER NAS	FL	12845	74797	28 15N	080 36W	0011	05 42 - 02 45	SOMAR	MA	
COCOA	BANANA RIVER NAS	FL	12845	74797	28 15N	080 36W	0011	03 45 - 07 47	AB	MA	
COCOA BEACH	PATRICK AFB	FL	12867	74795	28 14N	080 36W	0007	03 45 - 04 55	ABC	MA	
COCOA BEACH	PATRICK AFB	FL	12867	74795	28 14N	080 36W	0007	01 50 - 06 57	AB	MA	TCL5303,24,28
COCOA BEACH	PATRICK AFB	FL	12867	74795	28 14N	080 36W	0003	02 50 - 12 70	A-F	MA	2
COCOA BEACH	PATRICK AFB	FL	12867	74795	28 14N	080 36W	0007	06 50 - 08 54	WND TAB	M	T9377,17,59

EXHIBIT 139

SUMMARY TYPE: WND TAB

CITY	NAME - TYPE	ST	WBAN #	WMO #	LAT	LONG	ELEV	PERIOD OF RECORD	SUMMARY TYPE	SUMM FREQ	TAB#/REMARKS
PADUCAH	BARKLEY APT CAA	KY	03816		37 04N	088 46W	0121	01 50 - 12 54	WND TAB	M	T9480
PADUCAH	BARKLEY APT FSS	KY	03816		37 04N	088 46W	0121	01 51 - 12 60	WND TAB	MA	T6669
SHAWNEE	TVA NETWORK	KY			37 09N	088 47W	0108	05 53 - 10 56	WND TAB	SP	T8135,7
STURGIS	AAF	KY	13816		37 33N	087 58W	0113	10 44 - 09 45	WND TAB	MA	T6669
ALEXANDRIA	ENGLAND AFB	LA	13934	72246	31 19N	092 33W	0027	01 58 - 12 62	WND TAB	MA	T13261
BOOTHVILLE		LA	12884	72232	29 20N	089 24W	0001	05 71 - 04 75	WND TAB	SA	T52037,8
MONROE	SELMAN FIELD CAA	LA	13942		32 31N	092 03W	0028	01 54 - 12 58	WND TAB	MA	T13221
NEW ORLEANS	MOISANT INL APT WBAS	LA	12916	72231	29 59N	090 15W	0002	07 48 - 12 64	WND TAB	MA	T13267
NEW ORLEANS	MOISANT INL APT WBAS	LA	12916	72231	29 59N	090 15W	0002	01 55 - 12 64	WND TAB	MA	T13267
SHREVEPORT	BARKSDALE AFB	LA	13944		32 30N	093 41W	0051	11 50 - 10 60	WND TAB	MA	TCL6550,4
SHREVEPORT	MUNICIPAL APT WBAS	LA	13957	72248	32 28N	093 49W	0081	01 70 - 12 74	WND TAB	SA	T51643
AUBURN	LEWISTON MAP SAWR	ME	94709		44 03N	070 17W	0107	01 56 - 12 58	WND TAB	MA	T14061,8
AUGUSTA	STATE APT CAA	ME	14605		44 19N	069 48W	0108	01 50 - 12 54	WND TAB	M	T4581
BANGOR	OOW AFB	ME	14601	72607	44 48N	068 49W	0049	03 48 - 06 60	WND TAB	MA	TCL6550,1,4
BAR HARBOR	SAWR	ME	14616		44 27N	068 22W	0024	01 50 - 12 59	WND TAB	S	T15070,8,79
BRUNSWICK	NAS	ME	14611	74392	43 53N	069 56W	0024	12 51 - 12 59	WND TAB	MA	T3630,82
BRUNSWICK	NAS	ME	14611	74392	43 53N	069 56W	0024	01 58 - 12 62	WND TAB	MS	T4662,3,40,83
LIMESTONE	LORING AFB	ME	14623		46 57N	067 53W	0220	08 50 - 09 60	WND TAB	MA	TCL6550,4
OLD TOWN	FAA	ME	14622		44 57N	068 40W	0041	01 60 - 12 64	WND TAB	A	T15070,8
ROCKLAND	MUNICIPAL APT SAWR	ME			44 04N	069 06W	0014	06 54 - 05 59	WND TAB	A	T10864
RUMFORD		ME	94736	72618	44 32N	070 32W	0196	08 68 - 07 72	WND TAB	M	T01773,85
BALTIMORE	FRIENDSHIP INL APT WBAS	MD	93721	72406	39 11N	076 40W	0060	08 50 - 07 57	WND TAB	M	T1394
PATUXENT RIVER	NAS	MD	13721	72404	38 17N	076 25W	0014	01 50 - 12 54	WND TAB	M	T9171
SALISBURY	WICOMICO COUNTY APT CAA	MD	93720		38 20N	075 30W	0021	01 54 - 12 58	WND TAB	MA	T6946
BOSTON	LOGAN INL APT WBAS	MA	14739	72509	42 22N	071 01W	0010	01 58 - 12 62	WND TAB	MS	T4662,3,40,83
BOSTON	LOGAN INL APT WBAS	MA	14739	72509	42 22N	071 02W	0009	01 60 - 12 64	WND TAB	SA	T52039,3
BOSTON	LOGAN INL APT WBAS	MA	14739	72509	42 22N	071 02W	0009	01 70 - 12 72	WND TAB	MA	T15734,3
CHICOPEE FALLS	WESTOVER AFB	MA	14703	74491	42 12N	072 32W	0075	11 50 - 10 60	WND TAB	MA	TCL6550,4
FALMOUTH	OTIS AFB	MA	14704		41 39N	070 32W	0042	01 50 - 12 54	WND TAB	M	T9149
NANTUCKET	WBAS	MA	14756	72506	41 15N	070 04W	0014	01 48 - 06 57	WND TAB	M	T1121,40
NANTUCKET	WBAS	MA	14756	72506	41 15N	070 04W	0014	07 50 - 08 54	WND TAB	SP	T9867,33
NEW BEDFORD	SAWR	MA	94726		41 41N	070 57W	0023	08 50 - 08 54	WND TAB	SP	T9867,90
PROVINCETOWN	RACE POINT LBS CG	MA			42 05N	070 13W	0012	06 72 - 05 73	WND TAB	M	T1773
ALPENA	PHELPS COLLINS FIELD WBAS	MI	94849	72639	45 04N	083 34W	0210	03 59 - 04 61	WND TAB	MA	T4220
BATTLE CREEK	KELLOGG APT CAA	MI	14815		42 18N	085 14W	0285	01 49 - 12 54	WND TAB	SA	T51804,
BATTLE CREEK	KELLOGG APT CAA	MI	14815		42 18N	085 14W	0285	01 49 - 12 54	WND TAB	A	T10537,76
BATTLE CREEK	KELLOGG APT CAA	MI	14815		42 18N	085 14W	0285	01 49 - 12 54	WND TAB	SA	T51425,8
ESCANABA	MUNICIPAL APT SAWR	MI	94853	72648	45 44N	087 05W	0181	04 56 - 03 61	WND TAB	MA	T4220
GLADWIN	MUNICIPAL AIRPORT	MI	14828		43 59N	084 29W	0240	01 50 - 12 54	WND TAB	MA	T12198
GWINN	K1 SAWYER AFB	MI	94836		46 21N	087 24W	0362	10 56 - 09 60	WND TAB	MA	TCL6550,4,43

SOLMET, VOLUME 1 - USER'S MANUAL, HOURLY SOLAR RADIATION - SURFACE METEOROLOGICAL OBSERVATIONS

This User's Manual, revised in August 1978, shows the 26 stations for which the historical (mid-1952 through 1976) recorded hourly solar radiation data have been reviewed and corrected (rehabilitated) to remove known scale, instrument, and calibration problems. All the rehabilitated data are in metric units, the International System of Units (SI), and are available on magnetic tape which also contains the collateral hourly surface meteorological observations in SI units. Volume 1 also contains a list of 222 additional stations for which a file of estimated hourly solar radiation data has been developed for the period 1952 through 1976. This was done using the statistical relationship of hourly solar radiation versus sky-condition and sunshine data at the 26 stations with rehabilitated data. This User's Manual includes a detailed description of the characteristics of the magnetic tape format and coding. Copies of this manual may be secured from the National Climatic Center, Federal Building, Asheville, NC 28801.

SOLMET, VOLUME 2 - FINAL REPORT, HOURLY SOLAR RADIATION - SURFACE METEOROLOGICAL OBSERVATIONS

This report describes in detail the theoretical considerations and the methods used to develop the solar radiation data files outlined in SOLMET, Volume 1, User's Manual. Copies of this report may be obtained from the National Climatic Center, Federal Building, Asheville, NC 28801.

STAR TABULATIONS MASTER LIST

Compiled as of July 16, 1979, this Master List identifies the stations, alphabetized in State-station order, for which unpublished STAR (STability ARray) tabulations are available from the National Climatic Center. These tabulations are prepared following the methodology developed by air-pollution meteorologists in their attempt to produce information that would be useful in assessing the air-pollution potential at locations for which only surface meteorological data are available. They are based upon the ceiling height, total sky cover, and wind direction and speed reports in the hourly surface airways observations. The tabulations present frequency and percent frequency tables of wind speed versus wind direction for each of up to seven atmospheric stability classes that range from extremely unstable to extremely stable. The tabulations may be prepared on a monthly, seasonal, and annual basis and for the daytime and nighttime hours, or for any combination of these time periods.

This list is maintained current but an updated Master List has not been published. Copies of this published list and information about the availability of tabulations prepared since July 16, 1979 are available from the National Climatic Center, Federal Building, Asheville, NC 28801.

☆ U. S. GOVERNMENT PRINTING OFFICE : 1980 311-046/42

PENN STATE UNIVERSITY LIBRARIES
A000072042687

WORLD WEATHER RECORDS
1951-60
Volume I
NORTH AMERICA

FEBRUARY 1978 VOLUME 2 NUMBER 2
MONTHLY SUMMARY
SOLAR RADIATION DATA

STUDY OF WORLDWIDE OCCURRENCE OF
FOG, THUNDERSTORMS, SUPERCOOLED LOW
CLOUDS AND FREEZING TEMPERATURES

PUBLISHED FOR THE DIRECTOR,
APHY AND METEOROLOGY
1 SEPTEMBER 1978

SEPTEMBER 1978

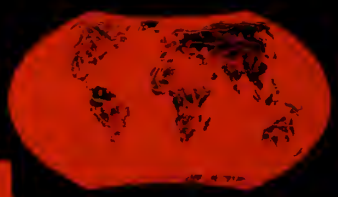
U.S. DEPARTMENT OF COMMERCE • National Oceanic and Atmospheric Administration • Environmental Data and Information Service

daily weather maps
Weekly Series MAY 14-20, 1979

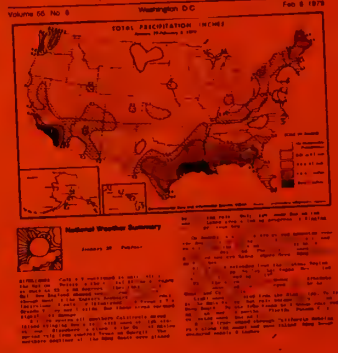
CLIMATOGRAPHY OF THE UNITED STATES NO. 20
Climate of
Coalinga,
California

CLIMATOLOGICAL DATA FOR
AMUNDSEN-SCOTT,
ANTARCTICA NUMBER 13
JANUARY 1973 THRU DECEMBER 1973

Climates
of the World



WEEKLY WEATHER
AND CROP BULLETIN



INDEX OF ORIGINAL
SURFACE WEATHER RECORDS
FOR STATION IN
IOWA

May 1979
Volume 23
Number 3
Mariners Weather Log

NOVEMBER 1978 VOLUME 28 NUMBER 1
Hourly Precipitation Data
NORTH CAROLINA
DAILY TOTALS

AUGUST 1978 VOLUME 31 NUMBER 8

MONTHLY CLIMATIC
DATA FOR THE WORLD
Sponsored by
World Meteorological Organization

U. S. NAVAL WEATHER SERVICE COMMAND

SUMMARY OF
SYNOPTIC METEOROLOGICAL OBSERVATIONS
INDONESIAN COASTAL MARINE AREAS
VOLUME 6
AREA 35 - SOUTHEAST NEW GUINEA
AREA 36 - NORTHWEST SOLOMON SEA
AREA 37 - ADMIRALTY ISLANDS EAST
AREA 38 NEW IRELAND NORTHEAST
AREA 39 NORTH SOLOMON SEA
AREA 40 SOUTHEAST SOLOMON SEA

April 1975

DAILY SERIES
SYNOPTIC WEATHER
MAPS

PART 1
NORTHERN HEMISPHERE
SEA-LEVEL AND 500-MILLIBAR CHARTS
July 1970